DOCUMENT RESUME

ED 473 799 CS 511 784

TITLE	Proceedings of the Annual Meeting of the Association for Education in Journalism and Mass Communication (85th, Miami, Florida, August 5-8, 2002). Communication Technology & Policy Division.
PUB DATE	2002-08-00
NOTE	242p.; For other sections of these proceedings, see CS 511 769-787.
PUB TYPE	Collected Works - Proceedings (021) -- Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC10 Plus Postage.
DESCRIPTORS	Broadcast Television; Credibility; *Fair Use (Copyrights); Government Role; Higher Education; *Internet; *Journalism Education; Newspapers; Spanish; *Telecommunications; Use Studies
IDENTIFIERS	*Digital Technology; Direct Satellite Broadcasting; Electronic Surveillance; Must Carry Rules (Broadcasting); Telecommunications Act 1996

ABSTRACT

The Communication Technology & Policy Division of the proceedings contains the following 7 papers: "Current Status of the Direct Broadcast Satellite Industry: Is DBS a True Alternative to Cable?" (Ju-Yong Ha); "An Analysis of the Characteristics of Early Internet Adopters" (Tien-tsung Lee, Linda Li-Shuan Wang and Paul Bolls); "Digital 'En Espanol': The Rise of Spanish-Language Television and the Transition to Digital" (Humberto Delgado and Lorna Veraldi); "A Multiplicity of Problems in Digital Must-Carry" (Daphne Eilein Landers); "Copyright Policy in the Digital Age: 'Fair Use' of Circumvention Technologies" (Seung Eun Lee); "State Theory and Telecommunications Surveillance Policy: The Example of the U.S. State's Clipper Chip Initiative" (Vandana Pednekar-Magal and Peter Shields); and "Credibility of Online Newspapers" (Yoshiko Nozato). (RS)

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Current Status of the Direct Broadcast Satellite Industry: Is DBS a True Alternative to Cable?

Running Head: Current Status of DBS

Paper presented to the Comm. Technology & Policy Division
at the annual AEJMC convention
in Miami, Florida, on August 7-10, 2002

Ju-Yong Ha
Ph.D. Student
Mass Communication and Media Arts
Southern Illinois University Carbondale
2021 Evergreen Terrace #4
Carbondale, IL 62901
Telephone: 1-618-529-0033
e-mail: hajy@siu.edu

Current Status of the Direct Broadcast Satellite Industry:
Is DBS a True Alternative to Cable?

Abstract

The DBS industry has been anxious to establish itself as a choice of multichannel television service in the U.S. This study reviews the recent changes in the DBS industry and examines the DBS industry's performance in the competitive multichannel television programming market. The paper also explores recent regulatory changes and cable industry's reaction to the competition from DBS. This examination provides a partial answer to the question whether the goal of the 1996 Telecommunication Act is being achieved. It suggests the rapid progress of the DBS systems may provide a possible solution to the cable's market dominance.

Current Status of the Direct Broadcast Satellite Industry:
Is DBS a True Alternative to Cable?

Introduction

Although cable TV is still the dominant method for transmitting broadcasting signals to the home in the United States, other innovators and entrepreneurs have entered in the market for multichannel video programming subscription services. Among alternative systems that offer competition to cable, direct broadcasting satellite systems are "the principal subscription competitor"(FCC, 2002, p.29).

Satellite subscription service emerged in the early 1980s as an alternative to cable service in rural areas where over-the-air broadcast and cable systems were inaccessible, and it has become popular in many areas in recent years. Although there were several failures of early satellite subscription services during the 1980s, developments in satellite technology, advanced programming techniques, and advanced or aggressive marketing strategies have made high-power Ku-band DBS services "the most significant competitor" (GAO, 2000) to cable TV.

The DBS industry has been anxious to establish itself as a choice of multichannel television service in the U.S. When DBS companies began operations in 1994, the goal was to get the basic TV system into as many rural subscriber homes as possible. But now, DBS providers "are aggressively pursuing current cable customers for their services" (Carlin, 2000, p.50).

Today, the two major DBS providers, DirecTV and the DISH Network are constantly attacking "the cable industry's most observable weakness" (Carlin, 2000, p.50). After cable was essentially deregulated under the Communications Act of 1984, "cable rates to subscribers rose rapidly and numerous complaints emerged about service quality" (Johnson & Castleman, 1991, p.v). As a result, "almost two thirds of new video subscribers were choosing [DBS] over cable" (GAO, 2000, p.19).

The high-power DBS service has a number of advantages over cable. Its digital signal provides a vastly improved picture and clear, CD-quality sound. It also offers viewers a vastly-expanded and ever-growing menu of channels. Providers are currently advertising up to 500 channels. Satellite TV often is cheaper on a month-to-month basis than cable (Why I love my dish, 2000). These advantages enable DBS "to attract former cable subscribers and customers not previously subscribing" to multichannel service (FCC, 2001, p.4).

For this reason, DBS has attracted much research interests from industry leaders, telecommunication researchers and government agencies. Early studies of DBS contributed to the body of knowledge on its history, technology and economic viability of the DBS industry (Johnson & Castleman, 1991; Elasmar, 1994), and summarized the innovative attributes of DBS (Viggiano, 1994). More recent studies explored DBS adoption issues based on diffusion of innovation theory (Bruce, 1996; Carlin, 1998a), and how consumers use DBS systems based on the uses and gratifications theory (e.g., Marghalani, Palmgreen & Boyd, 1998). Most of these studies were, however, conducted while DBS was in its initial stage where it targeted only rural subscribers. Because the DBS industry has seen a great deal of change in recent years, include the explosive growth in the number of subscribers, mergers and acquisitions and new regulatory framework, the results of these studies may not relevant to the current situation of DBS industry. Only a limited number of studies have been conducted regarding the recent success of DBS and most of them were done by government agencies (e.g., GAO, 2000) with the focus on economic aspects (e.g., Goolsbee & Petrin, 2001).

In this circumstance, the ultimate goal of this study is to review the recent changes in the DBS industry and examine the DBS industry's performance in the competitive multichannel video programming market. This examination may provide a partial answer to the question whether the goal of the 1996 Telecommunication Act is being achieved.

Developments in Satellite Broadcasting

Currently, American multichannel broadcasting subscribers have several alternatives to cable service. Alternative multichannel systems that offer competition to cable are direct broadcast satellite (DBS) systems, home satellite dish (HSD), "second" cable systems, wireless cable or multichannel multipoint distribution service (MMDS), and satellite master antenna television (SMATV) systems for the residents in multi-household dwelling units (Johnson & Castleman, 1991, p.v). Among these alternatives, direct broadcasting satellite systems are "the principal subscription competitor"(FCC, 2002, p.29) to cable TV.

Communication satellites joined the programming distribution market in the mid 1960s. Developments in satellite technology make it possible to deliver video programming directly to homes equipped with earth stations. By virtue of the efficiency of satellite communication, audiences have adopted satellite broadcasting as an alternative programming option since satellite subscription service emerged in the early 1980s. This section provides a brief history of satellite broadcasting.

Early History of Satellite Communication

A science fiction writer's hypothesis about using artificial satellites as transponder became a reality when the former Soviet Union launched, in 1957, the world's first artificial satellite, Sputnik, "a tiny beeping transmitter that orbited the earth every ninety minutes" (Parsons & Frieden, 1998, p.7; Dominic, Sherman, & Messere, 2000). In 1958, also, the U.S. launched its first satellite, Explorer 1, which provided preliminary information on the environment and conditions in space outside the earth's atmosphere. Since then, the "exploitation of satellite technology followed a lengthy competition between the U.S. and former Soviet Union for technological supremacy in space" (Parsons & Frieden, 1998, p.7). These early artificial satellites were used mainly to provide essential communication and information to the scientist community and the military. Wider and more reliable relay services were soon made possible by *geostationary communication satellites* that orbit the earth at an altitude of 22,300 miles above the equator where their orbital period exactly matches the rotation of the earth.

Although today we take for granted satellite services by private companies, all satellite communications were, in the beginning, international by design and coordinated between countries through government authorized entities and agencies. This was true until the Federal Communications Commission (FCC) implemented in 1972 an "Open Skies Policy" to "encourage private industry to enter the satellite industry" (Carlin, 2000, p.42). Deregulation of the satellite industry led to the development of commercial satellite systems and their entrance into the video programming delivery market for broadcast television program distribution and electronic newsgathering.

The first U.S. private domestic communications satellite was Western Union's Westar 1, launched on April 13, 1974, followed by Westar 2, and then a RCA satellite, Satcom F-1. These domestic geostationary satellites were initially designed for voice and data transmission, but quickly joined the video program distribution business.

As soon as commercial geostationary satellites were available, cable operators recognized the benefit of having access to satellite technology. In 1975 an east coast cable company, Home Box Office (HBO), began delivering TV programming via satellites to its affiliated cable service providers. Also, Ted Turner's Atlanta based TV station, WTBS sent its programming via satellites in 1976 to create the first "Superstation." Parsons and Frieden (1998, p.59) observed that "From 1976 to 1987 the number of satellite-delivered programming services grew from four to over seventy." Satellite technology made it possible "to use a single program delivery mechanism to serve the entire nation" (Parsons & Frieden, 1998, p.8).

Interestingly enough, the development and utilization of satellite supported the cable television industry by bringing changes in cable programming in the mid 1970s. Satellite transmission led to the creation of cable networks, and cable itself became a much more appealing service with new programming options. As a consequence, cable systems were able to be "rapidly deployed throughout urban and suburban areas across the country" (GAO, 2000, p.13). Parsons and Frieden (1998, p.2) describes this change in cable industry:

> Up until the mid-70s, cable TV was, for the most part, a service dedicated to retransmitting existing commercial broadcast television, bringing network and independent television stations to homes that otherwise could not receive them. Satellite opened up the possibility of creating a national, cost-efficient, distribution system for cable TV programming.

In short, satellites have substantially changed the content and composition of cable TV by expanding the scope and reach of the available programming (Parsons & Frieden, 1998, p.5). With the availability of satellite-delivered programming, cable TV quickly migrated from a localized distribution service to a nationally connected infrastructure with diverse content. Although satellite programming relay services were initially designed for cable networks and systems, "developments in satellite technology also make it possible to deliver video programming directly to homes equipped with" satellite receivers (Parsons & Frieden, 1998, p.9).

Satellite as a Multichannel Video Programming Distributor

After allowing private companies to enter the satellite industry by implementing the Open Skies Policy in 1972, the FCC assigned "two portions of the Fixed Satellite Service (FSS) frequency band to be used for satellite relay services: the *low-power C-band* and the *medium-power Ku-band* [italics added]" (Carlin, 2000, p.42).

Since then, there have been three types of satellite television systems available to home viewers: the low-power C-band *Home Satellite Dish* (HSD) or *Satellite Television Receive Only* (TVRO), the now defunct medium-power Ku-band *Direct-To-Home* (DTH), and the currently growing high-power Ku-band *Direct Broadcast Satellite* (DBS) systems.[1]

Figure 1. Three Types of Satellite Television Services

Service	**Frequency Used**
Home Satellite Dish (HSD)	Low-power C-band (3.7 GHz to 4.2 GHz)
Direct-To-Home (DTH)	Medium-power Ku-band (11.7 GHz to 12.2 GHz)
Direct Broadcast Satellite (DBS)	High-power Ku-band (12.2 GHz to 12.7 GHz)

C-Band HSD Service

The first satellite television systems available to consumers were TVRO or HSD systems. The home satellite dish (HSD), also known as television receive only (TVRO) system, uses the FCC assigned low-power C-band (3.7 GHz to 4.2 GHz). A large receiving dish is required to receive television signals from low-power C-band satellites.

Ironically, satellite programming via C-band was not initially intended to be transmitted directly to individual households. In late 1975, however, an engineering professor intercepted "a low-power C-band transmission of the HBO cable network on a makeshift satellite system he designed" (Carlin, 2000, p.42). He published a technical manual for the interception of these C-band signals, and the manual made TVRO "spread rapidly among video enthusiasts" (ibid). TVRO users soon realized they could receive "virtually anything on one of the [C-band] satellites" (Parsons & Frieden, 1998, p.60).

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[1] The term DTH and DBS are sometimes used interchangeably by the industry to refer to both medium-power Ku-band and high-power Ku-band services. To avoid misunderstanding, however, this study limits the term DTH to medium-power Ku-band services and the term DBS to high-power Ku-band service.

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As satellites proved their ability to provide television programming directly to homes, "a small but profitable industry grew up around home reception of video signals being distributed nationally by satellite" (Parsons & Frieden, 1998, p.60). Home satellite dish (HSD) that picks up satellite signals intended for cable headends and broadcasting stations started sprouting up all over the U.S. in the late 1970s and the 1980s.

In 1984 the Cable Communication Policy Act "legalized the private reception of satellite TV programming," and "permitted programming services like HBO to scramble their signals and to require TVRO dish owners to subscribe to these services" (Dominick, Sherman & Messere, 2000, p.32). Although the C-band HSD system started with unscrambled free channels like news feeds, scrambled programming also became available through subscription services after the enactment. Today, there are over 20 C-band satellites that may be received in the continental U.S. (Satellite TV and TVRO Info, 2001).

HSD or TVRO systems are characterized by big dishes that are usually 6 to 12 feet across. These big ugly TVRO satellite dishes were commonplace throughout the U.S., especially in rural areas not served by cable television services. The home satellite dish sales surpassed two million in 1988, three million in1990 and four million in 1996 (Dominick, Sherman & Messere, 2000, p.32; Jessell, 1996 cited in Carlin, 1998b, p.39).

A number of factors, however, prevented HSD systems from becoming "a realistic, national alternative to cable television for multichannel television service" (Carlin, 2000, p.42). These included the high cost of the system, the large size of the dish, and city and county zoning laws restricting the installation of the big dish. Due to these obstacles, subscribers to HSD services are declining in the late 1990s.

As of June 2001, the HSD subscribers were only 1,000,074 and continuously declining (FCC, 2002). The satellite industry contends, however, the "C-band remains the delivery vehicle for a core contingent of satellite subscribers and satellite programmers remain committed to offering programming" to the HSD services (FCC, 2002, p.34 citing SBCA Comments).

Although today satellite television services in the U.S. are mostly through small dish high-power Ku-band DBS systems, the C-band home satellite dish is still in operation. There are four remaining C-band programming service providers: Gemstar-TV Guide Superstar/Netlink Group, DSI Distributing, Satellite Receivers, Ltd., and the NRTC (National Rural Telecommunications Cooperative) (FCC, 2002, p.34).

Medium-power DTH System

The second satellite television system available to consumers was direct-to-home (DTH). In the 1980s, a few entrepreneurs tried to distribute satellite signals directly to consumers using the FCC assigned medium-power Ku-band (11.7 GHz to 12.2 GHz). The direct-to-home (DTH) systems would have advantages over existing C-band HSD systems. As Carlin (2000) described, the initial advantages of the medium-power DTH systems over low-power HSD systems "included the higher frequencies and the higher power of the Ku-band, which resulted in less interference from other frequency transmissions and stronger signals to be received on the smaller 3-foot dishes" (p.42).

In the United States, however, the DTH business in the 1980s was not successful "because a mass-market DTH service was unsustainable" (Parsons & Frieden, 1998, p.9). Scholars (Johnson & Castleman, 1991; Parsons & Frieden, 1998) pointed out several factors that might cause the failure of the DTH services. Not to mention high consumer entry costs (expensive dish equipments), "the services offered few channels, [and] had limited access to programming options." (Parsons & Frieden, 1998, p.9). Due to these obstacles, DTH ventures by Satellite Television Corporation (a subsidiary of Comsat), Crimson Satellite Associates, Skyband, Inc., and United Satellite Communications, Inc. (a subsidiary of Hubbard Broadcasting) "failed to get off the ground" (Carlin, 2000, p.43) in the early 1980s.

It was the cable television industry that was to rediscover the utility of medium-power Ku-band satellites in the mid 1990s. As a reaction to the advent of the competitive DBS industry, the cable television industry intended to use the medium-power Ku-band to distribute basic cable channels to consumers. The cable industry's intention was to establish a "Cable Head-End in the Sky" for consumers living in unserved areas by ground cable (Carlin, 2000, p.46). With the support of five other cable operators (Comcast, Cox, Newhouse, TCI, and Time Warner) and one satellite manufacturer (GE Americom), Continental Cablevision launched, in 1994, a successful medium-power Ku-band DTH service, named Primestar. Using GE Americom's medium-power K-1 satellite, Primestar then transmitted 12 basic cable channels to 3-foot receiving dishes on subscribers' premises (Carlin, id.). Primestar, however, offered "far fewer channels than any of the cable operators' own local cable systems, so they believed that their cable subscribers would not be interested in Primestar as a replacement for cable service" (ibid.).

Until early 1999, Primestar continued to offer programming to its 2.3 million subscribers competing with the high-power Ku-band DBS services. Cable TV's venture into DTH service, however, ended when Primestar's efforts to expand and enhance its services by acquiring ownership of the high-power DBS channels were blocked in 1998 by the U.S. Department of Justice. As a result, arguing "financial considerations and regulatory roadblocks for expansion," Primestar sold its assets and subscribers to DirecTV's parent company, Hughes Electronics Corporation (Carlin, 2000, p.47).

Hughes continued Primestar's service for a while, but the subscribers were soon moved to DirecTV's high-power DBS service. Primestar went out of business in September 2000. Although the medium-power Ku-band DTH system failed as a television programming distributor, telecommunication industry is now "preparing technology that will enable it to provide personal, worldwide wireless voice and data communication" (Parsons & Frieden, 1998, p.10).

In short, the medium-power direct-to-home (DTH) services in the 1980s ended up with "failed ventures and postponed plans in part because the proposed systems had limited channel capacities, required use of relatively large and expensive receiving dishes at the home, and had restricted access to programming" (Johnson & Castleman, 1991, p.v). Although it failed, the DTH system, along with the C-band HSD system, attracted the public's interest in satellite broadcasting and provided a basis for the success of DBS.

High-powered DBS Service

With the lesson from the failure of the medium-power DTH service in the 1980s, a new satellite service, high-powered DBS, opened the market successfully in 1994 with "smaller, cheaper dishes and cable-like packages of programming networks" (Parsons & Frieden, 1998, p.148). With the use of advanced digital technology and compression, the high-powered DBS can offer superior laserdisc-quality video and CD-quality sound and more program channels.

Between 1979 and 1989, the International Telecommunications Union (RARC, 1983) assigned the high-power Ku-band (12.2 GHz to 12.7 GHz) for "multichannel, nationwide satellite-to-home video programming services in the Western Hemisphere" (Setzer et al., 1980 cited in Carlin, 2000, p.43). These high-power Ku-band services were to be called *direct broadcast satellite* (DBS) services.

Under the international agreement, the United States has been allocated "eight satellite orbital positions each with a capacity of 32 uncompressed conventional television channels for domestic high-power DBS use" (Johnson & Castleman, 1991, p.vi). Among those eight orbital slots, three primary orbital slots at 101°W, 110°W and 119°W can provide full coverage of the continental U.S. Also, in 1983 the FCC granted eight licenses to construct DBS systems. Due to substantial start-up costs of satellite, however, the DBS industry was "stutter-stepping" through the 1980s (Parsons & Frieden, 1998, p.60). It was another 11 years before the first two DBS providers started their services.

DBS is a more advanced system than previous satellite broadcasting systems. The high-powered, high frequency signal can be picked up on a smaller, less expensive receiving dish. This not only reduced receiver cost, but also widened "public acceptability on aesthetic grounds" (Johnson & Castleman, 1991, p.vi). Parsons and Frieden (1998) illustrated that:

> Now, mass-produced, pizza-size terminals cost less than $200 and may come free to the consumer with the purchase of a DBS service package. These easy-to-use satellite terminals, diverse programming, advanced transmission technologies and aggressive marketing have made satellite TV a reality (p.9).

In addition, digital compression made it possible to have many channels on a single satellite. MPEG-1 was chosen in 1993 as an international standard for digital video compression, and the DBS services DirecTV and USSB implemented its improved version, MPEG-2, in 1995. Compression has made a major impact on the nature of satellite broadcasting. Every video signal can be compressed to make more efficient use of satellite capacity. By using video compression, DBS providers can "digitally compress eight program channels into the space of one analog transmission channel" (Carlin, 2000, p.44). This greatly increased the total number of program channels available to viewers. Because of the small dish and multichannel capacity, DBS initially attracted consumers primarily unserved by cable television.

High-power DBS systems have shown greater potential for widespread competition with cable systems than have other multichannel alternatives. However, there remained several factors that would limit early DBS providers' competitive viability. Johnson and Castleman (1991) pointed out that those factors were "the cost of small antenna home receiving terminals; operating expenses, including the costs of program acquisition; and demand for the additional programming that could be provided by DBS systems" (p.vii). Although most of these factors are being challenged by DBS providers, recent regulatory changes took a part in resolving them.

Recent Regulatory Changes

One cannot talk about technology without noting the influence of economics and programming. Also, one cannot talk about the history of DBS without referring to the development of law and regulation. Until the DBS industry blossomed, the U.S. Congress made several major changes in the legal framework.

After it established eight orbital positions for DBS satellites in 1983, the FCC granted conditional construction permits to eight applicants (27 C.F.R. Sect. 100.19b cited in Carlin, 2000, p.43). Those DBS applicants were originally required to complete construction contracts within one year and begin operation within six years of the contracts. None of DBS services was, however, launched until the mid 1990s due to economic problems. The satellite business required large initial start-up expenses to construct and launch satellites, but "investors were unwilling to invest money in new DBS services" (Carlin, 2000, p.44).

In addition to economic problems, DBS companies' inability to get programming was another major obstacle. Carlin (2000) pointed out, "Cable operators, fearing the loss of their own subscribers and revenue, were placing enormous pressure on cable program networks to keep their programming off the new DBS services" (p.44).

Cable Act of 1992

It was the Cable Television Consumer Protection and Competition Act of 1992 that solved the programming problem. The law required program providers to make their content available to alternative distribution services. As a result, DBS operators could have access to "the program sources they needed to attract investors and feature subscribers" (Carlin, 2000, p.44). The 1992 Act and the development of digital technology like video compression together allowed two DBS companies to begin national services that are "the same kind of service previously available only through" cable TV (Parsons & Frieden, 1998, p.63).

Over-the-Air Reception Device Rule

DBS providers "received [another] boost from the FCC in 1996" (Parsons & Frieden, 1998, p.150) when the Commission adopted the Over-the-Air Reception Devices Rule [OTARD] (47 C.F.R. Section 1.4000). Before the adoption of the rule, some cities had used zoning ordinances to control satellite dish proliferation. The 1996 OTARD rule prohibits most restrictions by local authorities or homeowners on setting up dishes on their property. The FCC (2001b) explains the rule:

> The rule applies to viewers who place antennas that meet size limitations on property that they own or rent and that is within their exclusive use or control, including condominium owners and cooperative owners, and tenants who have an area where they have exclusive use, such as a balcony or patio, in which to install the antenna.

At the same time, as satellite power increased from C-band to Ku-band, satellite earth stations shrank in size and cost. These changes in government regulations and technology have accelerated television viewers to adopt the DBS system.

SHVIA of 1999

In 1999 the U.S. Congress authorized DBS carriers to provide local TV signals, which "for the first time created head-to-head competition for cable" in major markets (Hearn, 2001, p.3). The enactment of the Satellite Home Viewer Improvement Act (SHVIA) of 1999 (P.L. 106-133) was to enhance competition in the multichannel video distribution market. The SHVIA allowed DBS companies to provide subscribers with local broadcast signals, which is called "local-into-local" service.

Before the passage of SHVIA, the DBS programming packages did not generally include local broadcast signals. As the U.S. General Accounting Office (2000) reported, the DBS operators' inability to provide local broadcast signals was "an important disadvantage for satellites companies" because it might "negatively affect [consumers'] decision on whether to subscribe to DBS" (p.5). Until 1999, satellite carriers were governed by the 1988 Satellite Home Viewer Act, as amended (17 U.S.C. 119), "which was originally passed at a time when satellite providers did not possess the technology to transmit" a local broadcast signal into a designated local market (GAO, 2000, p.15). The 1988 act granted only a limited exception to the exclusive programming copyrights of television networks and their affiliates. Under the provision, satellite companies were "licensed to deliver broadcast network programming only to those customers living in unserved households" (GAO, 2000, p.15).

However, technological developments in satellite such as the "spot beam" provided DBS operators with the ability to transmit local broadcast signals. The spot beam technology allowed "DBS to target the signal from a local broadcast station only to the satellite subscribers within that station's viewing area" (GAO, 2000, pp.15-16).

After the passage of SHVIA, the two major DBS companies are making local broadcasts available in many cities. DirecTV and the DISH Network now separately offer local channels in 41 of the 210 U.S. markets (Sky Report, 2002). As a consequence of local-into-local service, a DBS company reported that DBS's "overall subscriber levels have increased by 20 percent … and … 47 percent of [the company's] customers to whom it is available take a local channel package" (FCC, 2002, p.30). The DBS industry assumes that "the ability to offer local broadcast stations continues to be a significant factor in DBS subscriber growth" (FCC, 2002, p.30).

In short, advances in satellite technology during the 1990s, and regulatory changes allowed DBS services to become a significant competitor to cable. The next section reviews the current status of the direct broadcast satellite industry and competition in the market for multichannel programming services.

Current Status of the DBS industry

Current DBS Providers

The first direct broadcast satellite service providers were DirecTV and United States Satellite Broadcasting (USSB). EchoStar joined the mix in 1996, and DirecTV acquired USSB in 1996 that had offered premium service under a shared satellite access agreement with DirecTV. Although there are currently four companies licensed by the FCC to provide DBS service (Hughes' DirecTV, EchoStar's DISH Network, Dominion Video Satellite's Sky Angel and R/L DBS Company), only three companies, Hughes, EchoStar and Dominion provide DBS services (FCC, 2002, p.29). Hughes' DirecTV and EchoStar's DISH Network are major DBS providers operating in the U.S. Sky Angel's service is narrowly focused on religious programming.

In order to provide programming services to their subscribers, DBS providers acquire programming from video, audio and data programmers and digitize, compress, encrypt and combine the signal with other necessary data. And then, they uplink or transmit the signals to their DBS satellites to be received by their subscribers.

A DBS subscriber needs an 18-inch receiving dish to receive high-power Ku-band digital transmissions, a VCR-sized integrated receiver/decoder (IRD) or so called "set-top box" and a multi-function remote control in addition to a television set. The set-top box provides communication with the provider through telephone lines, and an on-screen interactive program guide, parental control, and sometimes a hard disk device enabling additional features (EchorStar, 2002).

The DirecTV and DISH Network systems both use the same size dishes, but consumers can only receive programs intended for their system types because of the system differences (DSS vs. DVB). In addition to the system differences, DBS companies use conditional access technology to prevent unauthorized viewing of their encrypted programming. The companies provide a subscriber with a credit card-size microchip embedded "smart card" (for DISH Network) to permit decryption of the programming for viewing by the subscriber. They can "update or replace the card periodically" (EchoStar, 2001, p.6).

Hughes' DirecTV

A subsidiary of General Motors, Hughes Electronics Corporation is the leading digital multi-channel programming distribution service provider in the U.S. In 1994 the company launched high-power DBS service in the U.S., known as DirecTV. In 1999 DirecTV acquired Primestar and USSB. As a result of aggressive marketing, and mergers and acquisitions, now DirecTV is a leading DBS service and the third largest distributor of multichannel video programming in the U.S. with more than 10.7 million subscribers at the end of 2001 (FCC, 2002, p.29; Hudson, 2002).

DirecTV uses the Digital Satellite System (DSS) that consists of an 18-inch receiving dish, an integrated receiver/decoder (IRD), and a multi-function remote control. Subscribers need to purchase "the DSS receiving equipment from satellite retailers, consumer electronic stores, or department stores" (Carlin, 2000, p.45). Consumers, then, pay a separate amount for monthly or yearly programming packages.

As of March 2002, DirecTV provided access to more than 300 channels of combined video and audio programming. Its service packages are priced from $31.99 to $81.99 and offer most cable, movie, broadcast, and sports networks, with some programming, such as NFL football available on an a la carte basis (see Appendix Table 1). DirecTV is the obvious choice for sports fanatics because of its unique sports packages. With its "season tickets" for most major sporting events, subscribers receive most of its programs from one satellite. (Why I love my dish, 2000). DirecTV is also offering a Spanish-language service, Para Todos, to subscribers (Carlin, 2000, p.57).

In addition to its *a la carte* programming package, DirecTV offered (as of March, 2002), for a fee, the local affiliates of ABC, CBS, NBC, and FOX in 41 markets, and a national PBS feed with every local station package (DirecTV homepage, 2002b).

EchoStar's the DISH Network

Marketing itself as the Digital Sky Highway Network (DISH Network), EchoStar Communications Corp. offers the standard menu of basic services and premium channels plus pay-per-view option, for an additional charge.

As noted above, DISH Network subscribers cannot pick up DirecTV signals because the Network "does not use the same DSS transmission format used by DirecTV" (Carlin, 2000, p.46). Instead, the DISH Network uses another "international satellite video transmission standard, Digital Video Broadcasting (DVB), which was developed after the DSS standard" (ibid.). The DISH subscribers need to purchase (or lease) the DVB system that consists of an 18-inch receiving dish, an IRD, and a multi-function remote control like the DSS system. Similar to DirecTV, subscribers can purchase programming on a monthly or yearly basis.

The DISH Network began operations in March 1996 "with a cut-rate package of cable channels designed to appeal to cost-conscious consumers" (Parsons & Frieden, 1998, p.149). The company started in 1996 "slashing the price" of the hardware package from $600 to $199, which resulted in a price war in the DBS industry (Levine, 1997, p.50). Under diverse promotion plans, the company began selling its receiver systems below manufactured cost to consumers "to stimulate subscriber growth, expand retail distribution of its product and build consumer awareness of the brand" (EchoStar, 2002, p.10). Moreover, from July 2000, the DISH Network, "which has attacked cable television from its inception" (Carlin, 2000, p.60), began offering subscribers the option to lease receiver systems, as cable operators do, under the "Digital Home Plan" promotion (EchoStar, 2002).

Carlin (2000, p.48) described that "using aggressive pricing strategies for programming and equipment, the DISH Network reached one million subscribers faster than any other DBS/DTH service" at the end of 1997. The competition that the network spurred also "helped drive down home equipment costs to consumers" (Parsons & Frieden, 1998, p.9). Currently, the Network is "the nation's sixth-largest pay-TV provider" (Hudson, 2002, p.C-1) with its 6.83 million subscribers at the end of 2001

(EchoStar, 2002). The DISH Network service is highly practical, and the packages are the most inexpensive yet comprehensive.

The DISH Network programming packages are priced from $22.99 to $72.99, which are cheaper than cable TV operators' average prices for the similar or equivalent services (see Appendix Table 2). The network offers, also, Spanish-language packages and more than 50 foreign-language channels including Arabic, French, Hindi, Russian, Greek and others (EchoStar, 2002, p.7).

Furthermore, the DISH Network is actively promoting its local broadcasting television packages to consumers "as the best way to challenge cable television's monopoly status" (Carlin, 2000, p.60) in the multichannel programming market. As of March 2002, EchoStar's Dish Network had local coverage in 36 markets using EchoStar VII and charges subscribers an extra $5.99 a month for this coverage (DISH Network homepage, 2002). Because the foreign-language feeds and the local broadcast signals are beamed over a second satellite, "those who receive these signals need a slightly larger dish that can see [two] satellites at the same time" (Why I love my dish, 2000).

The two companies, Hughes and EchoStar now hope to merge in an effort to create the nation's largest pay-television provider and compete with cable companies in providing such high-technology options as digital video recorders and interactive television (Harmon & Lee, 2001). As of March 2002, this transaction is pending before the FCC and the U.S. Department of Justice (FCC, 2001c). If their proposed merger is approved, according to EchoStar and Hughes, the combined company will deliver local broadcast TV channels in all 210 Designated Market Areas (DMAs) in the United States (DirecTV, 2002a).

Bringing Competition in Video Market: Market Success of DBS

As previously noted, the role of satellites was strictly supportive to the cable television industry when satellites first entered the video programming distribution market. When high-power DBS services were launched, however, the role changed from a supporter to an active competitor to cable.

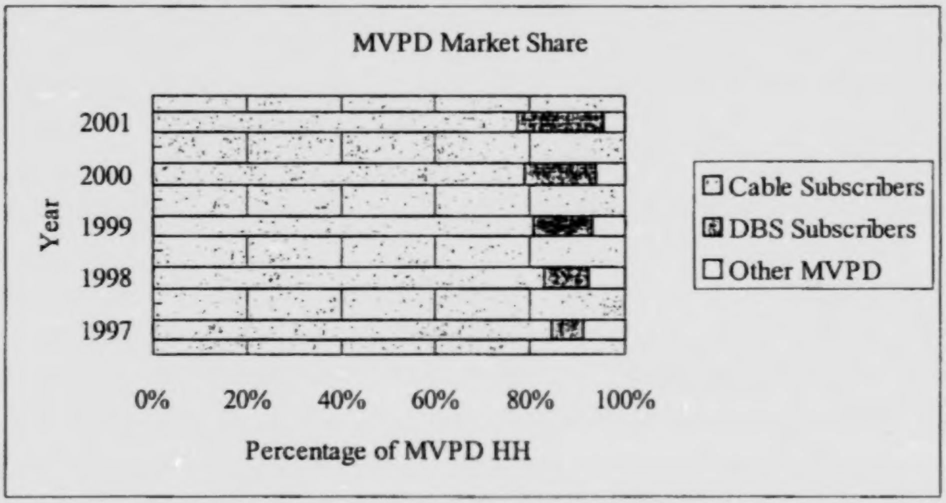
DBS services focused initially on rural areas, but "are now marketed to consumers in urban and suburban areas as well, and the acceptance of satellite television services among [these] consumers has enabled [DBS] providers to become the cable industry's most viable competitor" (GAO, 2000, p.12). Harmon and Lee (2001, p.A16) illustrates this change:

> [DBS companies] have had the greatest success in rural areas and among high-income households willing to pay several hundred dollars up front as well as high monthly fees for access to exclusive sporting events and movies. But the two major American satellite services … have broader ambitions. Recently they have made inroads into the densely wired suburban areas that have long been cable strongholds, garnering more than 20 percent of the total subscription television market.

The DISH Network and DirecTV are "aggressively pursuing current cable customers for their services" (Carlin, 2000, p.50). Various new marketing campaigns by the two companies constantly attack the cable industry's weaknesses: high subscription rates and low service quality (Johnson & Castleman, 1991, p. v). Due to "increased programming costs" and "past monopolistic practice" (Carlin, 2000, p.50), for example, cable rates have increased 35 percent since 1996 (Harmon & Lee, 2001), which is "almost three times faster than inflation"(Goolsbee & Petrin, 2001, p.6). In this circumstance, "almost two thirds of new video subscribers were choosing satellite over cable" in 1998 (GAO, 2000, p.19). DBS subscribers "swear by satellite as an alternative to cable. They say they pay less, get more choices and don't have to deal with a cable company" (Pennington, 2001, p.G7).

An FCC report (2002a), also, pointed out that cable's declining share was primarily attributable to the strong progress made by the DBS industry. The report found that DBS grew 23.7 percent, rising from 13 million subscribers in June 2000 to over 16 million in June 2001 (see Appendix Table 3). By contrast, the report continued, cable's subscriber base grew only by 1.9 percent during the same period. As of June 2001, DBS accounted for 18.2 percent of the 88 million-subscriber pay-TV market and 83 percent of non-cable multichannel subscribers. Figure 2 summarizes total television households numbers, and subscriber numbers and market shares for each multichannel video programming service in the U.S.

Figure 2. Subscriber Composition of MVPD Market



* Detailed data are available in FCC (2002a). *Annual Assessment of the Status of Competition in the Market for the delivery of video programming.*

Although cable now passes more than 90 percent of all households in the United States, there are still millions of prospective subscribers to DBS (FCC, 2001a). Moreover, the superior audio/video quality, the ability to carry HDTV signals and "larger inventory of channels and movies have proven attractive even for subscribers with cable television options" (Parsons & Frieden, 1998, p.9). In this regard, Carlin (2000) forecasted that "the immediate future for the DBS industry will be filled with marketing campaigns attacking cable's pricing and service, while showcasing the virtues of digital quality and program variety" (p. 62).

Reaction from The Cable Industry

As previously noted, cable still holds dominant position in multichannel television subscription market. Cable begins as a monopoly, which forms the economic power, "because the cable franchise offers that status at local levels" (Gomery, 2000, p. 253). Once an operator obtained a legal franchise, virtually no competitor would arise to challenge the franchise-holder for a defined period of time. (Parsons & Frieden, 1998).

Under this circumstance, the DBS industry's marketing into cable-dominant urban and suburban areas has brought dire competition in the pay-TV market. Satellite industry analysts were explaining the reason for the strong growth of DBS includes its advanced digital system and the advent of interactive services. DBS "subscriber gains will be spurred by [diverse] programming and the ability of satellite service providers to offer broadband services to compete with rival DSL and cable modem technologies" (DBS industry could add, 2000).

The cable industry responded to DBS entry in several ways. First of all, cable increased the number of channels they provide to consumers. 'A report (GAO, 2000) found, however, increased number of channels lead to higher cable rate than before due to program acquisition costs.

Another attempt to strengthen cable's competitive position was upgrading its analog system to digital. New digital cable can provide more specialized channels, the multiplexed premium movie channels, near video-on-demand (NVOD) service, and interactive services (Kang, 2001). According to a market report (J.D. Power, 2001), the cable industry trend toward digital subscription remains strong, as of 2001 with more than 27 percent of cable households reporting subscription to digital cable service.

Furthermore, cable service providers are making themselves more attractive through network upgrades. Coaxial cable is being upgraded to offer additional services, such as high-speed data access, which are discounted when bundled with cable TV service (CATV will meet DBS challenge, 2000). As Gomery (2000, p.249) explained, "many of the large multiple system operators (MSOs) spent as much as half a billion dollars each in each year. Cable companies have an advantage in the potential fiber-optic services because cable already passes more than 90% of the nation's homes with broadband facilities. Cable companies can more easily upgrade their systems for expanded broadband services and build scale economies in combining video and telephone services on the same network (Johnson, 1994). According to market research (J.D. Power, 2001), nearly 39 percent of all cable/satellite TV households reported that they would consider bundling all their telecommunications services. Those users cites convenience, receiving a single bill and having only one contact for questions as the top reasons they would switch to one company for all their telecommunications needs. When considering the fact that cable already has a large customer base, this customers' bundling preference will provide cable with more advantages.

In short, cable is narrowing the gap as it deploys digital services, and upgrades its network for broadband service. Industry sources say "DBS providers will, [however,] continue to lure a significant amount of customers away from cable companies this year and next, despite digital service offerings from cable" (Figler, 2000).

Customer Acquisition War

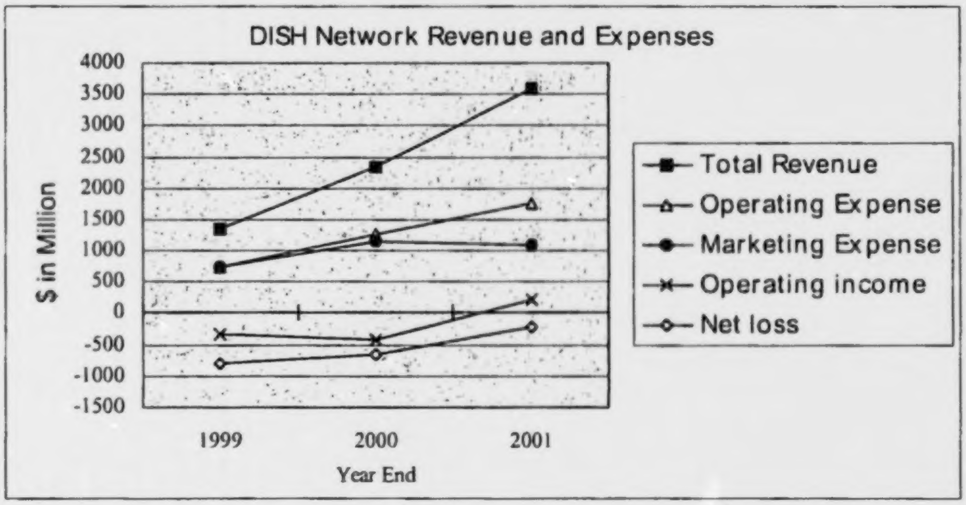
Armed with the services including all the major cable network channels and special interest channels plus dozens of pay-per-view movie selections, "DBS is gaining over 8,500 subscribers per day" (FCC, 2002, p.30). Although DBS providers' initial success came from consumers in rural areas without access to cable television and early adopters, now consumers are turning to DBS for new reasons. Much of the growth over the past several years can be attributed to consumers attracted by enticing deals offered by DBS providers.

DBS industry leaders contended that DBS's "future success in the subscription television industry depends on [its] ability to acquire and retain subscribers, among other factors" (EchoStar, 2002, p.10). Based on this recognition, DBS companies have been using diverse marketing strategies including broadcast and print advertising, direct mail, in-store retail promotions and demonstrations to entice new subscribers.

For example, the DISH Network's advertising costs, exclusive of subscriber promotion subsidies, were estimated to be $64.7 million, $138.5 million and $146.5 million for 1999, 2000, 2001, respectively (EchoStar, 2002). In addition to an aggressive adverting campaign, the DISH Network has provided "varying levels of subsidies and incentives to attract customers, including free or subsidized receiver systems, installations, antenna, programming and other items" (EchoStar, 2002, p.10). As a result, EchoStar reported a 30 percent increase in revenue and a shrinking net loss for the fourth quarter of 2001 (Hudson, 2002).

The DBS industry's marketing strategy, however, incurred significant costs for each new subscriber. The DISH Network's marketing expenses, for example, totaled $1.084 billion in 2001 (see Figure 3 and Appendix Table 4). Among the total marketing expenses, the company reported, $1.074 billion were spent for subscriber acquisition, which was "approximately $395 per new subscriber activation" (EchoStar, 2002, p.42). As a consequence, the EchoStar's DISH Network has reported significant operating and net losses, while reporting dramatic increases in number of subscribers since 1996 (EchoStar, 2002, p.F-10).

Figure 3. DISH Network Revenue and Expenses



The company, however, believes its future subscription television services revenue is largely dependent upon its ability to increase its customer base. In this regard, the DISH Network insisted that it might introduce other more aggressive promotions if it determines that it is necessary to respond to competition with cable (EchoStar, 2002).

Conclusion

It is generally said that one goal of the1996 Telecommunication Act was to promote competitive choices for consumer and to secure lower prices and higher quality services by encouraging the rapid deployment of new telecommunications technologies (FCC, 2001d). Many scholars have, however, questioned whether the goal is being accomplished. There are some evidences that the answer is no. When the U.S. Congress decided to deregulate cable through the 1996 act, for example, it expected that telephone companies would compete with cable companies to offer television services, and thus drive down prices. However, the cable industry became more concentrated and barriers to entry contributed to keeping out rivals such as DBS and telephone companies. In the sixth year since the enactment, the telephone companies have offered no significant competition to cable due to obstacles in building and deploying their video systems. Furthermore, by using its market power (economies of scale) and consolidation between cable systems and cable networks (vertical integration), the cable industry keeps expanding its dominance in pay-TV market.

In this circumstance, the DBS systems may provide a possible solution. "Unlike the technology hurdles facing telephone companies, DBS has no delivery impediments standing in its way" (Carlin, 1998a, p.1). Satellites are best suited to carry large volumes of communications traffic. Geostationary satellites rapidly and efficiently link remote areas of the earth with telephone, television and data information and provide transmission from a single uplink location to a single or multiple regional reception points. Because a satellite can deliver broadcast signals "to a geographical space equal to approximately one-third of the world" (Parsons & Frieden, 1998, p.88), satellite providers can reach a prospective audience large enough to support profitable operation.

Also, DBS has great potential because a satellite system can enhance consumer welfare by generating higher value as a satellite serves an increasing number of users. "Once a provider incurs the substantial sunk cost to make its footprint available, the incremental cost for it to serve an additional user via another earth station approaches almost zero" (Parsons & Frieden, 1998, p.146).

Now, many believe that DBS represents the biggest challenge to cable because it seems DBS has always been one step ahead of cable in offering new services (Figler, 2000). With improvements in satellite technology and regulatory changes, satellite broadcasting services have been moving from an ancillary service to a major distribution mode. Because of its ability to provide more channels, more information, and more entertainment, and because of the growing demand in society for increasing amounts of each, satellite technology probably was inevitable.

As previously noted, however, the future success of DBS is largely dependent on its ability to acquire and retain subscribers, among other factors. In this regard, DBS companies have been using diverse marketing strategies to entice new subscribers. However, the success of these costly marketing campaigns depends on whether the DBS industry's marketing tools effectively appeal to the customers.

For this reason, an in depth understanding of the customers of multichannel services is necessary to improve DBS providers' success in marketing campaign. Those who study this issue should explore the reason why consumers adopt (or do not adopt) DBS among various competing video delivery options. Exploring factors that influence consumers' DBS adoption is important in understanding the satellite TV adoption process in particular and the future of the broadcast market in general.

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Appendix.

Table 1. DirecTV Program Packages

Package	Price	Description
Total Choice	$31.99/mo.	Over 110 channels of programming and PPV
Total Choice Plus	$35.99/mo.	Over 125 channels, including family and children's networks, sports networks, a variety of news and entertainment channels, commercial-free music channels and PPV
Total Choice Premier	$81.99/mo.	Over 180 quality channels plus PPV
Premium Movie or Sports Packages	$12-$7 (w/ multiple choice discount)	HBO, STARZ, SHOWTIME, Cinemax and regional sports
Local channels	$4 - $6/mo.	Available in 41 markets
Phoenix TV	$19.99/mo.	Chinese-language programming featuring up-to-the-minute news, current affairs, financial market updates, variety shows and dramas from China, Hong Kong and Taiwan
Para Todos	$31.99 to $81.99	DirecTV's Spanish version service including 45 Spanish-language and 210 English-language channels

Source: DirecTV homepage (2002b). Retrieved on March 11, 2002 from http://www.directv.com/DTVAPP/learn/PackageOverview.jsp

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Table 2. DISH Network Program Packages

Package	Price	Description
America's TOP 50	$22.99/mo.	"Well-priced" entry-level package with entertainment, sports, news and children's programming
America's TOP 100 CD	$31.99/mo.	News, sports, movie, children's and family programming including channels in Top 50 package, plus more than 30 music channels and a dozen public interest channels
America's TOP 150	$40.99/mo.	169 channels including channels in Top 150 and Top 50 packages.
America's "Everything" Pak	$72.99/mo.	America's Top 150 package plus 4 premium movie channel packages
Premium movie package	$11.99/mo.	Subscriber can add a premium movie package with up to ten movie channels
Local channel	$5.99/mo.	Available in 36 markets
DISH Latino	$20.99/mo.	Spanish package including more than 20 Spanish-language programming channels plus 6 channels of music on DISH CD Latin.
DISH Latino Dos	$31.99/mo.	Bilingual programming package with more than 20 English- and more than 20 Spanish-language programming
DISH Latino Max	$39.99/mo.	Bilingual programming package with more than 20 Spanish-language channels in Spanish and more than 60 English-language channels

* Dish 500 hardware is required

Source: DISH Network homepage (2002). Retrieved March 30, 2002, from http://www.dishnetwork.com/content/programming/index.shtml

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Table 3. Estimated Subscriber Numbers for each MVPD Service

Technology Used	June 97	June 98	June 99	June 00	June 01
TV Households (HHs)	97,000,000	98,000,000	99,400,000	100,801,720	102,184,810
Change (%)	0.00%	1.03%	1.43%	1.41%	1.37%
MVPD Households	73,646,970	76,634,200	80,882,411	84,423,717	88,310,074
Change (%)	1.76%	4.06%	5.54%	4.38%	4.60%
% Of TV HHs	75.92%	78.20%	81.37%	83.75%	86.42%
Cable Subscribers	64,150,000	65,400,000	66,690,000	67,700,000	68,980,000
Change (%)	1.02%	1.95%	1.97%	1.51%	1.89%
% Of MVPD Total	87.10%	85.34%	82.45%	80.19%	78.11%
DBS Subscribers	5,047,000	7,200,000	10,078,000	12,987,000	16,070,000
Change (%)	17.78%	42.66%	39.97%	28.86%	23.74%
% Of MVPD Total	6.85%	9.40%	12.46%	15.38%	18.20%
HSD Subscribers	2,184,470	2,028,200	1,783,411	1,476,717	1,000,074
Change (%)	-4.10%	-7.15%	-12.07%	-17.20%	-32.28%
% Of MVPD Total	2.97%	2.65%	2.20%	1.75%	1.13%
MMDS Subscribers	1,100,000	1,000,000	821,000	700,000	700,000
Change (%)	-6.78%	-9.09%	-17.90%	-14.74%	0.0%
% Of MVPD Total	1.49%	1.30%	1.02%	0.83%	0.79%
SMATV Subscribers	1,162,500	940,000	1,450,000	1,500,000	1,500,000
Change (%)	3.24%	-19.14%	54.26%	3.45%	0.0%
% Of MVPD Total	1.58%	1.23%	1.79%	1.78%	1.70%
HSD Subscribers	2,184,470	2,028,200	1,783,411	1,476,717	1,000,074
Change (%)	-4.10%	-7.15%	-12.07%	-17.20%	-32.28%
% Of MVPD Total	2.97%	2.65%	2.20%	1.75%	1.13%
OVS Subscribers	3,000	66,000	60,000	60,000	60,000
Change (%)	36.99%	2100.00%	-9.09%	0.0%	0.0%
% Of MVPD Total	0.00%	0.09%	0.07%	0.07%	0.07%

Source: FCC (2002a). *Annual Assessment of the Status of Competition in the Market for the delivery of video programming.*

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Table 4. Revenue and Marketing Expenses of the DISH Network

	Year ended Dec. 31 (In thousands except subscribers data)		
	1999	2000	2001
DISH Network Subscribers	3,410,000	5,260,000	6,830,000
Average monthly revenue per subscriber	$42.71	$45.33	$49.32
TOTAL DISH NETWORK REVENUE	1,352,603	2,352,237	3,605,724
(revenue from subscription)	1,344,136	2,346,700	3,588,441
DISH NETWORK OPERATING EXPENSE	732,675	1,265,445	1,757,750
MARKETING EXPENSES	727,061	1,158,640	1,084,375
(subscriber promotion subsidies: cost of sales)*	478,122	747,020	459,909
(subscriber promotion subsidies: other)**	184,238	273,080	477,903
(advertising and other)	64,701	138,540	146,563
OPERATING INCOME (LOSS) ***	$ (347,091)	$ (424,066)	$ 212,302
NET LOSS	$ (792,847)	$ (650,326)	$ (215,498)

* "Subscriber promotion subsidies: cost of sales" includes the cost of DISH receiver systems

** "Subscriber promotion subsidies: others" includes net costs related to various installation promotions (commissions and rebates)

*** The revenue and expenses do not add up to operating income because other items were eliminated from the original table of consolidated statement of operations and comprehensive loss.

Source: EchoStar (2002). *Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2001*. Washington, D.C.:U.S. Securities and Exchange Commission.

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An Analysis of the Characteristics of Early Internet Adopters

by

Tien-tsung Lee
Assistant Professor
Edward R. Murrow School of Communication
Washington State University
Pullman, WA 99164-2520
Phone: 509-335-0113
Fax: 509-335-1555
E-mail: ttlee@wsu.edu

Linda Li-Shuan Wang
Doctoral Candidate
Edward R. Murrow School of Communication
Washington State University

&

Paul Bolls
Assistant Professor
Edward R. Murrow School of Communication
Washington State University
E-mail: pbolls@wsu.edu

Please direct correspondence to the first author

Paper presented to the Communication Technology & Policy Division
2002 AEJMC annual convention
Miami Beach, Florida

An Analysis of the Characteristics of Early Internet Adopters

Abstract

A large number of studies have utilized and tested the Diffusion of Innovations theory. However, few literature exits concerning the characteristics of early adopters of the Internet. Using a large national data set collected in 1997, the present study investigates predictors of Internet adoption, which indirectly created a profile of early adopters of the Internet. Our findings mostly confirm the characteristics of innovators and early adopters as proposed by Everett Rogers, but provide more depth and breadth in the understanding of early users of the Internet.

An Analysis of the Characteristics of Early Internet Adopters

The Internet is the most important communication technology developed in recent years. A great number of studies have been conducted about the Internet and its users. In terms of theoretical framework suitable for examining Internet adoption in its early development, the theory of Diffusion of Innovations stands out. Another two highly relevant theories are Uses & Gratifications and Knowledge Gap. Unfortunately there are relatively few studies about the Internet that have used a large national sample to test these theories, especially in terms of the characteristics of early adopters.

The present study utilized a large national survey conducted in 1997, when the Internet, particularly the World Wide Web, was still not widely used. Due to the fact that the data were collected before wide spread use of the Internet, such information is uniquely suited for an examination of predictors of early adoption of the Internet.

The purpose of this study is to investigate why some people chose to use the Internet in its early stage of development, and what factors distinguished them from non-users. This approach encompassed the three influential communication theories mentioned above because it seeks to: 1) identify the characteristics of early adopters; 2) investigate the relationships between such usage and early adopters' social and communication needs; and 3) measure the difference in terms of social economic status and other related variables between early adopters and non-adopters.

It is important to point out that the present study is not to directly test either Uses & Gratifications or Knowledge Gap. These two theories are only used as framework in the design of the study. Developing a profile of early adopters based on the Diffusion of

Innovations theory is not the focus of present study, either. Rather, early adopters' and users' characteristics described by Rogers (1995) and tested by others (e.g., Atkin, Jeffres, & Neuendorf, 1998; Papacharissi & Rubin, 2000) are used as guidelines in this study to determine which independent variables are better predictors of such adoption. However, our findings can be seen as an indirect test of such "profile" characteristics.

Theoretical Framework

The Internet

The Internet is undoubtedly one of the most important innovations in recent years. Originated as the product of a cooperative research effort of the US Federal Government in 1969, the Internet has been commercialized and extended its use to anyone with a personal computer, a modem, a telephone line (or other form of connection) and an access provider (Rai, 1998; Rogers, 1995). With its capacity of digitized texts, audio and visual presentation, the Internet, especially the World Wide Web, has rapidly grown as a new communication medium since the early 1990s. The Internet has not only provided consumers with resources by breaking through barriers imposed by geographic boundaries, but also challenged traditional media markets (Dickson, 2000).

A fairly recent study of Internet use showed that more than fifty million people in the United State use the Internet and 7.8 billions businesses are on the Net (Ha & James, 1998). Reports in the popular press indicate that the number is still growing, which is echoed by the findings of two national surveys conducted by the Pew Research Center (2000a & b). In responding to this trend, more and more corporations have invested in e-commerce and supported the Internet with 22 million dollars in U.S. Internet advertising in 2000 (Dreazen, 2000). The rapid growth of Internet advertising reflects business leaders' strong optimism toward the ability of this new media vehicle to reach potential customers.

Relevant Mass Communication Theories

As theorized by Tichenor, Donohue, and Olien (1970), a "knowledge gap" may occur between demographic segments in a society. Tichenor, Donohue, and Olien (1970), proposed that a knowledge gap could develop between people who have the access and skills to use information technology to improve their lives and those people who lack critical access and skills. Such a knowledge gap could potentially represent the biggest threat to the future of the Internet in terms of its overall impact on society because it establishes some "information haves" and "information have nots."

A few recent studies about the Internet have used this theory as their research framework. Reavy and Perlmutter (1997) treated political candidates' web sites as sources of information in their research. Rogers (2001) used the concept of Knowledge Gap to discuss differences between those with and without Internet access. According to the Department of Commerce, the gap between Internet users and non-users has widened in terms of their income, ethic group, education, and living area (Lieberman, 1999). Possible reasons behind such gap include the limitation of computer and Internet access as well as the skills and other resources required to adopt this new technology.

Data used in the present study provide a unique opportunity to go back in time and measure whether there was a significant gap in terms of social-economic status between Internet users and non-users in 1997.

Another relevant theory is Uses and Gratifications, which investigates various reasons for using different media, or the needs of the audience to be fulfilled by certain media. Examples of needs include cognitive (e.g., acquiring information), effective (e.g., emotional and pleasurable), personal integrative (e.g., strengthening credibility), social integrative (e.g., strengthening contacts with family and friends), and tension release (e.g., escape and diversion) (Katz, Gurevitch, & Hass, 1973; Severin & Tankard, 1992). In the past few decades this theory has been used in analyses of the usage of various media, such as cable TV and VCR (Heeter & Greenberg, 1985; Rubin & Bantz, 1987, 1989). Not surprisingly, this theory has also been used in recent studies of Internet usage (Atkin, Jeffres, & Neuendorf, 1998; Papacharissi & Rubin, 2000).

Although using secondary data does not allow the present authors to directly identify motives predicting Internet adoption, this approach still allows thorough investigations of how social and communication needs associate with Internet usage.

Since 1960s, the theory of diffusion of innovation has been introduced and utilized to explain how technological innovations have been distributed by examining the characteristics of innovations, communication channel, adoption time, and adopter characteristics (Rogers, 1995). Diffusion of innovation has been used by researchers working in a variety of disciplines, such as anthropology, rural sociology, public health, communication, and marketing to explain who, when, where, why and how people adopt technological innovations, information, products and ideas (Rogers, 1995).

In the line of Internet research, the diffusion of innovations theory has been used to explain and predict the diffusion time and pattern of this new technology (Rai, 1998) as well as to forecast the future of the Internet market. However, there is little explanation of how innovators and early adopters differ from late adopters other than demographic variables. An exception is a recent study by Atkin, Jeffres, and Neuendorf (1998) that argued that media-use and technology orientations among the audience differentiate Internet users and non-users.

As the theory suggested, the cumulative number of adopters by time will form a S-shape curve and the adopters can be categorized as innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%), and laggards (16%) (Rogers, 1995). The sizes of the above categories have been challenged by other scholars who argue that the distribution of adopters is not necessarily a normal bell-shaped one (Bass, 1969; Mahajan, Muller, & Srivastava, 1990). They proposed the following four categories: 1) early adopters (9.5 – 20%, including .2 – 2.8% of innovators); 2) early majority (29.1 – 32.1 %); 3) late majority (29.1 – 32.1 %); and 4) laggards (21.4 – 23.5%). It is possible that insight into what variables predict early adoption could provide some theoretical insight into the rate of adoption of a technological innovation like the Internet.

The most prominent aspect of the Internet, the World Wide Web, was "born" in 1993. By 1995, only 3% of Americans, and roughly 20% of online users, had ever signed on to the Web (Pew Research Center, 1998). In 1995, only 3% of the U.S. population went online everyday, and the figure was increased to only 12% in 1998 (Pew Research Center, 1998). Such figures supported the theorized sizes of early adopters mentioned above. Thus, using a 1997 data set in the present study appears to be an ideal way to test for predictors that can provide needed theoretical insight into adoption of the Internet.

Rogers (1995) generalized the characteristics of the adopters by socioeconomic status, personality status, and communication behavior. Innovators and early adopters are more literate, educated, rational, less fatalistic, highly connected through an interpersonal network and have higher media exposure. The strength of the correlation between early adopters and Roger's proposed variables differs from study to study but researchers generally agree with Roger's description of early adopters (Chan & Misra, 1990; Mahajan, Muller, & Srivastava, 1990; Strutton & Lumpkin, 1992; Onkvist & Shaw, 1989).

A few excellent studies about predictors of technology adoption (including personal computers, fax, audio information, and Integrated Systems Digital Networks) were conducted in recent years (Atkin, Jeffres, & Neuendorf, 1998; Jeffres & Atkin, 1996; Lin, 1998; Neuendorf, Atkin, & Jeffres, 1998). All of them investigated the following variables of adopters: demographics, communication needs, media usage, and interest in new technology. One of the studies from this group of researchers concerned Internet adoption (Atkin, Jeffres, & Neuendorf, 1998), and concluded that adopters and non-adopters differed in terms of age, education, income, maintaining a higher level of interest in technology, and having slightly different media habits, but there was no difference in terms of their desire to fulfill communication needs, or being "cosmopolite" in terms of communication (such as paying attention to national and international news and talking with strangers).

This particular study, although well designed and executed, was based on a sample of 377 survey respondents in a metropolitan area of the Midwest conducted in 1996. One may wonder whether a larger national sample would yield different conclusions.

The present study extends the work done by Atkin and colleagues (1998) by examining variables related to Internet adoption using a significantly larger and more nationally representative sample. The selection of independent variables is based on the theoretical framework of both Knowledge Gap and Uses & Gratifications.

It is premature to develop theoretically derived predictions concerning adoption of the Internet due to a lack of research, specifically experimental research that could test causal rather than correlational relationships, in this area. Therefore, the present study addressed the following broad research questions instead of testing hypotheses:

Research Questions

Based on the studies and theories reviewed above, the present authors generated the following research questions:

RQ1: Are demographics and political views, psychographics, communication and media needs, and attitude toward new technology related to early adoption of the Internet?

RQ2: Among these factors above, which ones have a stronger effect?

RQ3: In general, how do Internet early adopters and non-adopters differ?

Method

Sample

The 1997 version of a large data set was used in this study. The DDB Needham's Life Style is an extensive consumer research data set collected by a leading advertising agency annually. This national survey has an N of about 3,600. Since 1975, this agency annually selects a national quota (matching the U.S. population on age, income, and area of residence) sample of 4,000 for its mail panel survey, with a consistent response rate of around 80% (Cafferata, Horn, & Wells, 1997).

This *Life Style* survey contains about 500 questions concerning respondents' beliefs, values, habits, activities, and media and product usage. Most of them are on a 6-point "strongly agree" to "strongly disagree" Likert scale. The 7-point-scale activity variables are based on questions of how many times in past year respondents participated in the activity in question (0, 1-4, 5-8, 9-11, 12-24, 25-51, 52+ times).

The present study tested four groups of independent variables: demographics and political views, psychographics, communication and media, and attitude toward new technology and the Internet. The dependent variable is a question about how many times in the past year a respondent used the Internet. This variable was measured on a 7-point scale (0 = none, and 7 = 52+ times; see **Table 1**).

Statistical Procedure

To test whether the 1997 Life Style data set is suitable for analysis of early adoption of the Internet, frequencies of several variables were run. For example, the frequency of the usage of the Internet by the respondents was tested to make sure that the Internet was not widely used by them in 1997.

Multiple regression analyses were used in the present study to answer the first two research questions. A hierarchical, forced-entry model was run to test the four groups (blocks) of independent variables. "Less important" variables such as demographics were entered first to provide a more conservative analysis, while respondents' attitude toward new technology and the Internet were entered last. Variables turned out to be nonsignificant (p. > .001) in the original model were gradually removed to yield a final "clean" model.

In order to explore possible differences between early adopters and non-adopters of the Internet, respondents were divided into two groups. Those who used the Net more than twice a month (25+ times a year) were coded as early adopters (10.4%), and the rest were coded as non-adopters (89.6%). A user should be someone who logs on to the Internet on a regular basis, thus 25+ times a year is a relatively conservative cut-off point. This was then used as the grouping variable in a series of t-tests and cross-tabs that compare demographical differences between early adopters and non-adopters. Only significant findings are reported.

Due to the large sample size, the power of statistical test was increased. In other words, any test is more likely to be significant in a large sample. Therefore, to reduce the probability of Type I error (rejecting the null hypothesis when it is actually true), the significant level in this study was reduced from the standard 0.01 to 0.001 (two-tailed). In other words, this present study has a much higher standard to determine statistical significance.

Independent Variables

Block 1: Demographics and Political Views

This group of variables includes age, sex (women), race (white), income, and education. In addition, respondents' political ideology was measured by a 5-point scale (1 = extremely liberal and 5 = extremely conservative). The level of political interest was measured on a 6-point scale (1 = low and 6 = high). The reason for including political view is the assumption that liberals may be more open to new things. Also, people with a higher level of political interest may be more likely to seek information from various media, including the Internet. Therefore, the analysis includes respondents' level of political interest as well as political ideologies.

Block 2: Social and Psychographic Variables

There are five constructed scales in this category: opinion leader, novelty-seeking, social activeness, information-seeking, and cosmopolite.

The opinion leader scale was based on four variables (Chronbach's alpha = .60, N= 3,370), all measured by a 6-point Likert scale, from definitely disagree to definitely agree with the following statements: "I have more self-confidence than most of my friends," "I like to be considered a leader," I am the kind of person who knows what I want to accomplish in life and how to achieve it," and "my opinions on things don't count very much." The last item's direction was reversed before being entered into the final scale.

The scale of novelty-seeking was based on two variables measured by a 6-point scale (alpha = .63, N = 3,390). They were "I like to buy new and different things" and "I am usually among the first to try new products."

The scale of social activeness was based on three variables (alpha = .61, N = 3,402). They were all measured on a 6-point Likert scale from definitely agree to definitely disagree with the following statements: "I am a homebody," "I would rather spend a quiet evening at home than go out to a party," and "I enjoy parties, games, shows – anything for fun." The last item's direction was reversed before the scale construction.

The fourth scale, information-seeking, was based on six activity variables (alpha = .65, N = 3,400). They measured how may times (on a 7-point scale) in the past year respondents did the following: sent for a brochure for product information, called a toll-free number for product information, attended a lecture or class, finished reading book, and went to a public library.

The cosmopolite scale was based on 7 variables (alpha = .58, N = 3,356) measured on a 6-point scale. They were: "I am the kind of person who would try anything once," "I am interested in the cultures of other countries," "I like to visit places that are totally different from my home," "I like the feeling of speed," "I don't like to take chances," "I would feel lost if I were alone in a foreign country," and "I am afraid to fly." The last three items' directions were reversed before entered into the final scale.

Block 3: Needs and Usage of Communication and Media

A total of 7 variables belong to this group, and none of which was a constructed scale. They include two statements (on a 6-point Likert scale) about the news media "I need to get the news (world, national, sports, etc.) everyday" and "you really can't trust the news media to cover events and issues fairly." The reason for including the media distrust variable is that a negative attitude toward the media would affect one's usage of the news media.

There are two additional statements concerning the media: "Television is my primary form of entertainment," and "I like to be sure to see the movies everybody is talking about." There are 3 additional variables measuring the frequency (7-point scale) of the following activities in the past year: rented a video, wrote a letter to the editor, and went to a club meeting. One reason for including these variables is the assumptions that the need for news may encourage Internet usage. Another assumption is that if one has the habit of using various forms of media for information or entertainment, he or she is likely to try a new form of medium.

Block 4: Attitude toward technology and the Internet

The Life Style data set includes a variable testing respondents' attitude toward new technology in general: "I am usually among the first to try new technologies." A scale of attitude toward computer/Internet was constructed based on 4 items (alpha = .68, N = 3,309). They are: "I don't have a clue what the internet is an what it can do for me," "We'd be better off without computers," "The internet is the best place to get information about products and services," and "Surfing the Internet is more fun than watching television."

Findings

To examine the validity of using a 1997 survey to test early adoption of the Internet, the frequency of respondents' Internet usage was reviewed in **Table 1**. Only 6.4% of them used the Internet more than 52 times in the past year. And a total of 10.4% used the medium more than 25 times (twice a month on average). This finding indicates that the Internet was still in its early stage for adoption.

Table 2 reveals the distribution of commercial online services for personal use. Only 6.6% of respondents used such services more than twice a month, which echoes the finding in **Table 1**. As for specific use of the Internet, a quick review of **Table 3** showed that popular features of today, such as participating in a chat room and making banking transitions, were still in its infancy in 1997 (only 7.9% and 1.8% of respondents, respectively, had such experience).

[Tables 1-3 about here]

As for the predictors of Internet usage (measured on a 7-point scale), only the following variables passed the p. <001 test: age, sex (women), income, education, being socially active, information-seeking, wrote letters to the editor, and attitude toward both new technology and the Internet. (See **Tables 4 & 5**.) The strongest predictor was one's attitude toward the medium (computer and Internet) in question (beta = .71; standardized beta = .43 in the "clean" model), followed by one's attitude toward new technology (beta = .13 and standardized beta = .10 in the "clean" model).

[Tables 4-5 about here]

To answer **RQ1**, the findings above suggest that people are more likely to be early adopters of the Internet if they are: younger, male, having a higher income, better educated, being less socially active (spending more time at home), being an information-seeker, being a frequent writer of letters to the editor of a newspaper or magazine, enjoying new technologies in general, and having a positive attitude toward computers and the Internet. One's usage of the news or mass media does not matter in terms of Internet adoption. This suggests that the Internet was not a competitor for traditional media in 1997, which is related to a finding in Atkin et al's 1998 study (Internet adopters do not necessarily manifest a greater desire to fulfill various communication needs).

In sum, early adopters of the Internet appear to have somewhat distinct psycho-graphic and demographic characteristics. They also tend to have distinct attitudes toward new technology. This result generally supports the findings of two previous Diffusion studies (Atkin, Jeffres, & Neuendorf, 1998; Rogers, 1995).

The answer to **RQ2,** as mentioned earlier, the best predictor of early adoption of the Internet is one's general attitude toward computer and the Internet. The second best predictor is one's attitude toward new technologies. This finding again echoes those of previous studies (Atkin, Jeffres, & Neuendorf, 1998; Rogers, 1995).

To answer **RQ3**, a series of t-tests show that adopters and non-adopters differ in terms of age, income, education, political ideology, and interest in politics. Adopters tend to be younger (mean = 40.76 vs. 48.63 in exact years, t = 9.06, p. < .001), having a higher income (mean = 9.86 vs. 7.59, t = -.988, p. < .001), are better educated (mean = 5.75 vs. 4.87, t = -12.97, p. < .001), are more liberal (mean = 3.18 vs. 3.42, t = 4.49, p. < .001), and are more interested in politics (mean = 3.41 vs. 3.08, t = -3.75, p. < .001). Men are more likely than women to be early adopters of the Internet. Among early adopters, 62.1% are men and 37.9% are women. By contrast, among non-adopters 42.7% are men and 57.3% are women. Also, 14.5% of men and only 7.1 of women are adopters (Chi-square = 48.55, p. < .001). Interestingly, t-tests results slightly differ from those generated by multiple regressions. For example, political interest and ideologies are not significant factors in the regression models, but early Internet adopters and non-adopters differ in these two variables.

A chi-square test between race (whites and non-whites) and adoption (early adopters vs. non-adopters) did not yield a difference that was statistically significant (Chi-square = 2.64, p. > .10). When the variable of Internet adoption was compared against four racial categories, the chi-square still did not turn out significant. Therefore, race did not make a difference in terms of the early adoption of the Internet.

Conclusion and Discussion

Our results support the three communication theories used as our theoretical framework. The characteristics of Early Adopters of Innovation proposed by Rogers (1995) are supported by our empirical research concerning the Internet, which is one of the first studies that have done so with a nationally representative sample. Our findings suggest that a group of individuals who have traditionally enjoyed certain advantages are more likely to be early adopters of the Internet. They are men with a higher income and education, who are more politically active and interested, and have a more positive attitude toward new technology in general and Internet in particular. Somewhat surprisingly, race did not turn out to be a significant factor in our analysis.

The differences in characteristics discussed above imply that the Knowledge Gap will be widen between the haves and have nots. In terms of Uses and Gratifications, early adopters of the Internet tend to be information-seekers who are less socially active and prefer to stay home than going out. They also feel more comfortable writing letters to the editor to express their opinions.

It is understandable that the findings of the present study differ slightly from those of a similar study about Internet adoption with a smaller local sample (Atkin, Jeffres, & Neuendorf, 1998). For example, they found that Internet access is positively related to such factors as magazine reading and movie and video viewing. Our findings, in comparison, do not include any significant factor in terms of media usage.

In addition to a larger sample, the present study appears to have a broader measurement of many characteristics than the Atkin et al study. For example, the concept of "cosmopolite" in the present study was operationalized by questions concerning one's sense of adventure and interest in other cultures, which covers more ground that talking to strangers and paying attention to national and international news. Considering the "world wide" nature of the Internet and World Wide Web, the operationalization of "cosmopolite" used in this study could provide additional insight concerning adoption of the Internet. Similarly, the operationalizations of information-seeking and opinion leadership used in this study appear to have covered more aspects of how one leads his or her life.

Another interesting point about the findings of the present study is the "homebody" nature of Internet early adopters. Surfing the net can be a time-consuming activity, and one may reduce social interaction with others as a result. Such a phenomenon warrants further investigation in future studies.

Distinguishing the characteristics of early adopters is a critical aspect of Diffusion of Innovations theory. The most recent significant communication innovation is the Internet. Thus, the important first step in applying the theory of Diffusion of Innovations to the Internet is to examine what variables are related to early adopters of the Internet. This study took a step in that direction, using a large, nationally representative data set. Future research can investigate the existence of a knowledge gap between early adopters of the Internet and non-adopters. The existence of a set of characteristics which tend to describe early adopters should give researchers the confidence to derive more theoretically grounded predictions concerning where a knowledge gap may exist and what the effects of a knowledge gap related to the Internet might be.

Table 1
How many times respondents used the Internet in the past year

Usage Frequency	N	%	Cum %
None in past year	2492	73.3	73.3
1-4 times	226	6.6	80.0
5-8 times	104	3.1	83.0
9-11 times	101	3.0	86.0
12-24 times	122	3.6	89.6
25-51 times	137	4.0	93.6
52+ times	217	6.4	100.0

Mean	1.95	Std err	.032	Median	1.00
Mode	1.00	Std dev	1.86	Variance	3.45

Valid cases = 3,399 Missing cases = 63

Table 2
How many times respondents used commercial online service for personal reasons in the past year

Usage Frequency	N	%	Cum %
none in past year	2796	81.3	81.3
1-4 times	166	4.8	86.2
5-8 times	86	2.5	88.7
9-11 times	56	1.6	90.3
12-24 times	108	3.1	93.4
25-51 times	99	2.9	96.3
52+ times	127	3.7	100.0

Mean	1.64	Std err	.03	Median	1.00
Mode	1.00	Std dev	1.56	Variance	2.44

Valid cases 3,438 Missing cases 24

Table 3
Specific Usage

	Yes%	No%	N
1. Purchased or ordered a product	4.3	95.7	3,346
2. Made banking transitions	1.8	98.2	
3. Sent E-mail	17.2	82.8	
4. Made Travel Arrangements	3.1	96.9	
5. Chat room or online forum	7.9	92.1	
6. Search info before major purchase	7.9	92.1	
7. Search info about company/product	10.4	89.6	
8. Explored an interest or hobby	14.8	85.2	
9. Search info for business reason	9.7	90.3	
10. Search info for school/education	9.6	90.4	
11. Go on a cyber date	.9	99.4	

Table 4
Multiple Regression Model I

Original Model
Dependent Variable: Internet Usage

Variable	B	Standardized Beta	p-value
Block 1: Demographic and Political Views			
Age	-.01	-.09	*
Sex (Women)	-.33	-.09	*
Race (White)	.19	.04	
Income	.03	.05	
Education	.10	.07	*
Liberal	-.03	-.02	
Political Interest	-.02	-.02	
Block 2: Social and Psychographic Variables			
Opinion Leader	-.02	-.01	
Novelty	-.05	-.03	
Social	.07	.04	
Info-seeking	.18	.09	*
Cosmopolite	-.02	-.01	
Block 3: Communication and Media			
News	.03	.03	
News Distrust	.05	.04	
TV	.01	.01	
Movie	-.03	-.02	
Video	.01	.01	
Letter to editor	.25	.07	*
Club meeting	.01	.01	
Block 4: Attitude toward Technology & the Internet			
NEWTECH	.14	.11	*
TECHATL2	.71	.43	*
(Constant)	-1.79		

R =.61　R Square = .37　Adjusted R Square = .37

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	22	3980.98	180.95
Residual	3048	6733.14	2.21

F = 81.92*

N of Cases = 3,071

*p < .001

Table 5
Multiple Regression Model II

Clean Model
Dependent Variable: Internet Usage

Variable	B	Standardized Beta	p-value
Block 1: Demographic and Political Views			
Age	-.01	-.08	*
Sex (Women)	-.36	-.10	*
Income	.027	.06	*
Education	.10	.07	*
Block 2: Social and Psychographic			
Social	.09	.05	*
Info-seeking	.19	.09	*
Block 3: Media and Communication			
Letter to editor	.25	.08	*
Block 4: Attitude toward Technology & the Internet			
NEWTECH	.13	.10	*
TECHATL2	.71	.43	*
(Constant)	-1.82		

Multiple R = .61
R Square = .37
Adjusted R Square = .36
N of Cases = 3,071

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	10	3928.65	392.87
Residual	3060	6785.46	2.22

F = 177.17*

* p < .001

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Digital *En Español*:
The Rise of Spanish-Language Television and the Transition to Digital

A Paper Presented to the Communication Technology and Policy Division
Association for Education in Journalism and Mass Communication

by

Humberto Delgado
Associate Professor
Department of Journalism and Broadcasting
Florida International University
Biscayne Bay Campus
North Miami, FL 33181
(305) 919-5639
delgadob@fiu.edu

and

Lorna Veraldi
Associate Professor
Department of Journalism and Broadcasting
Florida International University
Biscayne Bay Campus
North Miami, FL 33181
(305) 919-5523
veraldil@fiu.edu

Miami Beach

August 9, 2002

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Humberto Delgado, Associate Professor
Florida International University
delgadob@fiu.edu
and
Lorna Veraldi, Associate Professor
Florida International University
August 2002
veraldil@fiu.edu

Abstract

As U.S. television makes the transition to digital, Spanish-language television is coming of age. Multicasting multilingual broadcasts could generate substantial additional advertising revenue. However, a survey of station managers in Top Ten Hispanic Markets reveals only limited interest in Spanish multicasts among managers of English-language stations and no interest at all in English multicasts among managers of Spanish-language stations.

Digital *En Español:*
The Rise of Spanish-Language Television and the Transition to Digital

When one of the authors began working in television in Miami more than three decades ago, to consider broadcasting in Spanish was heresy or madness. About the only Spanish television offering on the air was a half-hour weekly news program hosted by Dr. Manolo Reyes and aired as a public service to new arrivals from Cuba by WTVJ, then Channel 4 and Miami's oldest television station. When in late 1968 and early 1969 Channel 6 (then independent WCIX-TV) considered airing a half-hour newscast in Spanish every night, Monday through Friday, it took the station's shareholders totally by surprise.

WCIX's forté at the time certainly was not in news. The station was mostly airing off-net reruns; third-run motion pictures and *I Love Lucy* called Miami's Channel 6 home. The station aired only short English news briefs throughout the broadcast day. One person served as the station's news director/writer/anchor. The rest of the News Department consisted of one film cameraperson and a secretary who also functioned as the Public Service Director. Wouldn't a Spanish-language newscast at 11:00 PM be good counterprogramming? After all, a newsroom of three could not compete with the regular 11 o'clock local newscasts in English.

Panorama Mundial started with Humberto Estévez as anchor, a fairly well known Cuban announcer who had, in addition to excellent diction, a pleasant voice and a good on-camera persona. Máucha Gutiérrez was in charge of the weather and some soft/fashion/local social news. Both became the darlings of the town.

The single film cameraperson from the English newsroom also filmed for this newscast. The station did not have a film-developing machine. "Film at Eleven" was controlled by the closing each business day of the Wometco film lab, next to WTVJ in downtown Miami, which developed the 16mm reversal color film for *Panorama Mundial.* Late breaking news at night would be seen either the next evening, or not at all. There was no budgeted overtime for the lab. The same news cameraperson also was assigned to shoot commercials for the Spanish news.

Under the direction of Joe Pérez, a Cuban who had been the general manager of Havana's Channel 2 in the pre-Castro era, *Panorama Mundial* started to generate income—as much a novelty at 11:00 PM on Channel 6 as the Spanish-language news program that made it possible. Amazingly enough, while "News is a money losing proposition" was still dogma at most English-language TV stations, *Panorama Mundial* was making money! What had originally been questioned as a flaky notion became a sound monetary idea.

Local entrepreneurs came knocking at the station's door. They wanted to buy airtime from the station for their own programs and commercials. Spanish TV in Miami was now brokering airtime. The goose really started to lay golden eggs. Pérez, who had a great eye for sales, went national. The Miami market started to see national accounts on WCIX's Spanish programming. Many of these national spots for companies such as Ford, General Motors, Procter and Gamble and others started to speak *español* thanks to a creative dubbing system developed and voiced by one of the authors, with almost perfect lip-sync commercials inviting Spanish-speaking viewers to enjoy the products.

Pérez became convinced that the station should start airing Spanish programming as a lead-in to the news at 11. This time nobody on the station's board of directors was laughing. Technical problems almost killed the idea before it started. Productions from South America were recorded at 7 1/2 inches per second (ips), while the U.S. standard was 15 ips. Special video heads and VTR machines were needed for proper playback of the videotapes. The fact that the programs were in black and white made no difference to an audience hungry for Spanish-lânguage programs. Before long *Simplemente Maria* from Peru and *Nino* from Argentina began to keep Miami's Spanish-speaking viewers glued to their sets, along with other *novelas* (Spanish-language soap operas that, unlike their English counterparts, are of limited duration, frequently running for no more than a single season[1]).

The ratings started to "make sense," accompanied by a growth in income. Pérez was billing well over a million dollars by himself, much more than the whole English-language sales staff at the station. The "Tonight Show" concept (in concept only, certainly not in production values) was added when *Buenas Noches* with Norman Díaz and Pili de la Rosa started airing for an hour at 11:30 PM every weeknight.

Then General Cinema purchased WCIX in 1974. The new company was not interested in Spanish programming and slowly the station started to turn back to English-language programming. This move allowed then WAJA, Channel 23, a struggling Miami UHF, to expand its Spanish programming to fill the void. It offered an array of Mexican *novelas* that stole the hearts of Miami's *abuelas* (grandmothers) and *mamás*. Spanish International Network (SIN) found the Miami station to its liking and bought it. SIN, of course, would become Univision and Channel 23, WLTV, the flagship station for the Univision network.

In the thirty years since WCIX's bold experiment, Spanish-language television in the United States has undergone a dramatic evolution. Univision, with Televisa and Venevision as its partners, has become the strongest Spanish-language network in U.S. Hispanic markets, and Miami the epicenter of the Spanish-language earthquake. Census 2000 only confirmed what had gradually begun to dawn on the American television industry in the 1980s[2]: At the start of the new millennium, Hispanics have become the fastest growing minority group in America.[3] Seven states have Hispanic populations of more than a million.[4] In 2000, 13% of Americans were Hispanic. By 2010, 15% of Americans will be Hispanic.[5] By 2050 about one in four Americans will be Hispanic.[6] By the end of this century, that number is expected to grow to one in three.[7] In 2001, Miami-based market research company Strategy Research Corp. predicted that by 2050 there would be more Hispanics in the United States than in Mexico.[8]

The purchasing power of Hispanics (currently estimated at an annual $428 billion)[9] is significant and growing. According to Strategy Research Corp., the purchasing power of U.S. Hispanics has "outstripped that of every country in Latin America."[10] The strength of the United States Hispanic advertising market was particularly notable during the 2001 economic downturn. While many magazines watched their advertising revenues shrink in 2001, for instance, the U.S. edition of *Selecciones*, Reader's Digest's Spanish-language magazine, saw its ad revenues almost double over the previous year, up from $604,000 in the first quarter of 2001 to $1.2 million during the same period in 2002.[11] *Selecciones* publisher Elizabeth Bradley, speaking in Miami in 2002, said of the Hispanic market: "It's not a niche market anymore. Hispanics are your new consumer. Get on board, here comes the next baby boom."[12] Advertisers who had once overlooked Hispanic consumers now considered them "a new prospect." [13] In the post-9/11 gloom, as other advertising budgets were being slashed, advertisers considered it important to "hold on to budgets for this [new] market."[14] As Jose Cancela, president of Spanish-language radio network Radio Unica, put it: "There are just too many of us with too much purchasing power to ignore."[15]

The Growing Importance of the Hispanic Television Audience

Spanish-language television seemed immune to the malaise suffered by the rest of the television business in the sagging fourth quarter of 2001. While 2001 may have been less than the "stellar year" Spanish-language television executives had hoped for, Univision and its rival Telemundo both enjoyed double-digit annual revenue growth.[16] The bankrupt Kmart, fighting for survival, has turned its attention to the 32 percent of its shoppers who are black or Hispanic. In spring 2002 the beleaguered retailer announced plans to air Spanish-language spots voiced by singer José Feliciano on TV and cable channels targeted to Hispanics.[17] Kmart would not increase its advertising budget, but would spend more of it on "mulitcultural advertising."[18] English-language networks approached 2002 upfront sales cautiously, canceling March pre-upfront presentations to save money. Telemundo's president, Jim McNamara, on the other hand, was "looking forward to a very bright upfront," [19] with sales to 30 or 40 new clients. The reason for his optimism: "The census will be huge for us."[20] So, he predicted, would NBC's purchase of Telemundo, which closed in April 2002.[21]

Changes in 1999 in the FCC's duopoly rules so far have led to two major purchases of station groups across the English/Spanish language divide. In December 2000, Univision announced it would spend over a billion dollars to purchase the 13 stations owned by Barry Diller's USA Network[22] to expand its reach and offerings. In some of those markets, Univision had not previously owned a station. For example, in Atlanta (where the Hispanic population had tripled to over 400,000 in the 1990s), Univision in January 2002 relaunched former USA Network station WVUG-TV as a Univision network station with plans to air a locally produced weekly half-hour community affairs program called *Nuestra Georgia.*[23] In other markets (New York, Los Angeles, Chicago, Dallas-Fort Worth, Houston and Miami-Ft. Lauderdale) where Univision already owned one station prior to the USA buy, it would use its new duopoly to launch youth-oriented network TeleFutura. Univision counted on TeleFutura to produce a net increase in Spanish-language viewing by counterprogramming its own programming to lure a youthful Hispanic audience from English-language programming.[24]

While Univision expanded its reach and created a new network, NBC in the fall of 2001 announced that it would seek FCC approval to purchase Telemundo for $2.7 billion.[25] Telemundo, a perennial also-ran in the Spanish-language television competition, had enjoyed phenomenal success in 2001 with a Colombian-produced prime-time blockbuster, *Yo Soy Betty la Fea,* ("I Am Betty the Ugly One"). *Betty la Fea* became "more than just a TV show."[26] The Spanish-language import about an ugly duckling who transforms into a beautiful swan lifted Telemundo's prime time ratings over Univision's for the first time in a decade. PTA meetings were rescheduled and dinners delayed to accommodate viewing.[27] Betty, whose frumpy clothes and thick glasses set her apart from the traditional leading lady on the Spanish *telenovela,* drew viewers who had never before watched these prime-time soaps.[28] Importantly, *Betty la Fea* drew interest from English-language media as well. *The Miami Herald,* in addition to covering Betty's success on its front page, ran a contest to find Betty's homely local look-alike.[29] In some major markets, *Betty* outperformed English-language hit *Friends.* It became "a cultural phenomenon," its success likened to "the heyday of *Dallas.*" [30] In terms of the 2001 season, it was "the *Survivor* of the Spanish-language set."[31] *Betty la Fea* streaked across both Spanish-language and English-language radar screens, a crossover phenomenon with the power to influence both sides of the language divide. Before NBC announced its plans to buy Telemundo, it had already purchased the English-language rights to *Betty La Fea.*[32]

Like Univision with TeleFutura, Telemundo also has created a new service aimed at younger viewers. In October 2001 Telemundo transformed former cable channel Gems to Mun2 ("Mundos").[33] The new service is aimed at the Hispanic "MTV generation," replacing the *novelas* and talk shows that had characterized Gems with music programming and youthful drama series.[34] (Univision, too, has a cable service, Galavision.)

The growing Hispanic audience has encouraged new competition. In the fall of 2000, Henry Pappas, CEO of Pappas Telecasting, announced that it would team with Mexico's TV Azteca to launch a third U. S. Spanish language network, Azteca America.[35] A year later, the new network was "still alive but significantly delayed"[36] following a series of technical and financial setbacks.

Other less ambitious, but noteworthy developments are underway among English-language broadcasters seeking to tap the Spanish-language market. In 2001, CBS became the first network to offer a soundtrack in both English and Spanish for a regular daytime series, making the Spanish-language soundtrack of its soap *The Bold and the Beautiful* available on Secondary Audio Program (SAP). It also added Hispanic characters to the cast and added storylines concerning Hispanic issues.[37] In October 2001, KTKA-TV, Topeka, Kansas, began a local Spanish-language newscast, *Contacto Latino*, the only newscast in Spanish in the market.[38] In March 2002, in Tampa, Florida, "bolstered by the area's growing Hispanic community and its long history of Hispanic newsmakers, Bay News 9 launched what it bills as the nation's first all local news cable channel in Spanish."[39] The channel, Bay News 9 en Español, was described as the first of what could become replicated nationwide. Debuting with one anchor and one reporter, it will provide news on the local Hispanic community, news and weather from Latin America and Spanish-language translations of English-language stories reported on Channel 9 News.[40] English-language cable networks are creating both dubbed and original Spanish-language programs, including *Discovery en Español, CNN en Español, Fox Sports World en Español, ESPN Desportes, Playboy TV en Español, MTV S* and *HBO Latino.*[41]

The Transition to Digital Television

As Spanish-language television matures and expands in the United States, the entire U.S. television industry is undergoing the transition from analog to digital under an ambitious timetable mandated by the federal government. The transition does not appear to be proceeding as quickly as Congress initially had hoped. More than two-thirds of the nation's commercial television stations missed the May 1, 2002 deadline for start-up of digital broadcasts.[42] Consumers have been lukewarm. As one broadcaster put it, "There's still no real audience equipped for DTV."[43] Some skeptics wonder whether consumers ever will embrace the new technology: at the 2002 NAB Convention, comedian Jay Leno joked that "at the present rate, by the next millennium, there could be as many as 75 people with HDTV."[44] Assuming it will find a market, however, digital technology could open interesting possibilities for both Spanish-language and English-language stations to compete for each other's audiences. Originally aimed at making HDTV, or high definition television, compatible with spectrum allocations established for U.S. television by the FCC in the 1950s, the development of digital compression techniques has also made it possible for American television broadcasters to offer multiple channels of programming over their digital spectrum. No longer forced to choose either English or Spanish, will American television stations cross the language divide and exploit multicasting as a means of reaching new audiences and advertisers?

The Hispanic Audience: Missed Opportunities for English-Language Broadcasters

The opportunities presented to American broadcasters by the growth of Hispanic households (defined by the Census and by Nielsen as households headed by a person of Hispanic origin or descent[45]) take on added importance when one considers the audience fragmentation that has occurred as a result of competition by cable and alternative delivery systems. While Hispanic households are somewhat more likely to have 2 or 3 television sets than U.S. households overall[46] and have slightly higher VCR penetration rates than U.S. television households overall,[47] Hispanic households lag when it comes to cable penetration rates. While cable penetration rates among U.S. television households as a whole exceed 80%,[48] cable penetration among Hispanic television households is significantly lower, only about 63%.[49] Moreover, cable penetration among Hispanic households has increased more slowly than cable penetration among American television households overall. Between 1996 and 2001, cable penetration for total U.S. homes increased from 65% to 78%. Among Hispanic households, cable penetration during the same period grew from 54% to 62%.[50] In other words, cable penetration among Hispanic households has yet to reach the same level as for total U.S. households in 1996. For broadcasters, Hispanic households could represent an important opportunity to staunch some of the flow of audience to cable.

Moreover, the Hispanic audience is young. About a third of U.S. Hispanics are under 18 and almost half are under 26.[51] Heads of Hispanic households are on average significantly younger than heads of U.S. television households overall. In U.S. Spanish Dominant households (those in which adults speak only Spanish or mostly Spanish at home),[52] over 36% of heads of household are under 35.[53] This compares to about 22% of total U.S. households headed by those under 35.[54] By contrast, over 33% of the heads of total U.S. households are 55+. Fewer than 20% of Spanish Dominant households are headed by individuals aged 55+.[55] In total U.S. households, persons ranging in age from 18 to 34 make up only about 23% of households. By comparison, persons 18-34 make up over 27% of total Hispanic households. In Spanish Dominant households, over 30% of household members are 18-34.[56] Hispanic and particularly Spanish Dominant households present an unusual opportunity for television broadcasters to reach young audiences.

The Hispanic Audience: Important Realities for Spanish-Language Broadcasters

The Hispanic audience can be defined in a variety of ways. In the U.S. television business it has largely been defined by language.[57] Broadcasters and program suppliers operating in an analog environment have been faced with the choice of providing English-language programming or Spanish-language programming. However, it is conceivable to consider the Hispanic audience other than in terms of language. There may be cultural, political, or lifestyle issues beyond language that characterize a Hispanic community or communities. Within a household defined as Hispanic or even Spanish Dominant, there may be household members who use English most commonly or exclusively, but who share common interests with individuals who prefer Spanish or speak only Spanish. And, large and fast growing as the Hispanic audience may be, the English-language audience is larger and is predicted to remain in the majority. Spanish-language broadcasters have as much incentive to reach English-language audiences as their English-language counterparts have to reach Spanish speakers.

This takes on particular importance given charges of under-representation or misrepresentation of Hispanics on American television.[58] According to a recent report by the Screen Actors Guild, despite the growing percentage of Hispanics in the U.S. population, Hispanic actors fill only about five percent of prime time roles on English-language networks.[59] Moreover, when Hispanics do appear on television, say some observers, they are "consistently portrayed more negatively. They are stick figures in secondary roles or stereotypically cast as lazy, devious, not to be taken seriously or dangerous."[60] Few stories reported on network news are about Hispanic Americans, say critics, and those stories that do air portray Hispanics "more often as criminals or problematic immigrants than as creative, civic-minded, intelligent individuals."[61] Such stereotyping leads English-language news operations to miss stories important to Hispanic audiences, making it more likely that a revolution or riot will be covered than an election in Latin America.[62] The perceived or real failures of English-language networks and stations to cover news important to Hispanic audiences and to portray the full range of Hispanic experiences is likely to be as problematical for Hispanics who speak mostly or only English as for Hispanics who speak mostly or only Spanish. Television stations that broadcast only in Spanish are as likely to miss opportunities to reach important English-speaking audiences as television stations that broadcast only in English are to miss Spanish speakers who might find English-language programs interesting if only they were accessible. As noted previously, Hispanic households are slightly more likely than other U.S. households to have multiple television sets and some members even of Spanish Dominant households may prefer to watch television in English, rather than in Spanish.

The Top Ten Hispanic Markets

Below are figures showing number and percentage of Hispanic TV households in Nielsen's Top Ten Hispanic Markets, along with the percentage of Hispanic households that are Spanish Dominant.[63]

Hispanic Market Rank	Market Name	Total TV Households	Hispanic TV Households	% Hispanic	% Hispanic that are Spanish Dominant[64]
1	Los Angeles	5,354,150	1,573,400	30	57.3
2	New York	7,301,060	1,142,420	16	55.7
3	Miami	1,549,680	555,780	36	67.7
4	Houston	1,831,680	415,440	23	57.4
5	Chicago	3,360,770	413,570	12	58.8
6	Dallas	2,201,170	348,750	16	60.1
7	San Francisco	2,426,010	347,980	14	47.5
8	San Antonio	710,030	309,800	44	30.5
9	Phoenix	1,441,660	271,650	18	46.9
10	Harlingen	273,370	220,080	81	55.5

While all of these markets have substantial numbers of Hispanic homes, in only seven of these ten markets are Spanish Dominant homes the majority. While the percentage of Hispanic homes in the Top Ten Hispanic Markets varies from a low of 12% of homes in Chicago to a high of 81% of homes in Harlingen, Texas,[65] the percentage of Hispanic homes that are Spanish Dominant ranges from about 30.5% in San Antonio to

67.7% in Miami.[66] In only two of the Top Ten Hispanic Markets, Miami and Dallas, do Spanish Dominant households make up 60% or more of all Hispanic households.[67] Hispanic households do not necessarily prefer or even understand Spanish-language programming. A station manager in one border market (Yuma, Arizona-El Centro California) recently noted that while five over-the-air signals from Mexico reach his market, ten percent of the Hispanics in his market on the U.S. side can't speak Spanish at all and about 80% of Hispanics in the area are bilingual.[68]

Survey of the Literature

With the transition to digital in its early stages and the emergence of the Hispanic market a relatively recent phenomenon as well, little has been written about the intersection of the two. A discussion of Spanish-language television by John V. Pavlik and Jackie Oregel Pavlik published in 1998 in *Television Quarterly*[69] touched on the interesting possibilities for Spanish-language television in the digital age and suggested that one "probable change" would be increased specialization targeting subsets of the U.S. Hispanic market—Cubans, Mexicans, Puerto Ricans and South Americans. This would be important, the authors noted, because Hispanic immigrants were "not likely to be assimilated into the English-language mainstream."[70] While Pavlik and Pavlik took note of the ease with which digital broadcasters could simulcast Spanish-language versions of their programs, they did not develop this theme beyond noting that KTTV-TV in Los Angeles had begun to use SAP to simulcast some of its programming in Spanish, the first and only Los Angeles station to simulcast its news programs in Spanish and likely the first of many stations that would do so, they predicted, once "digital broadcasting makes simulcasting even easier and more accessible"[71] However, Pavlik and Pavlik wrote at a time when the transition to digital was in its earliest stages and it was difficult, if not impossible, to determine whether broadcasters actually were making plans to simulcast or to use digital technologies in other ways to cross the English/Spanish divide.

With the deadline for all stations to be broadcasting digitally come and gone, it is not at all clear that broadcasters will use digital capabilities for simulcasting as Pavlik and Pavlik predicted in 1998. In response to telephone queries in March 2002, neither ABC, CBS nor NBC reported any plans to use SAP for Spanish-language simulcasts of network news. Indeed, ABC, which had previously experimented with the use of SAP to simulcast network news in Spanish, said it had dropped the project in early 2002, due to cost. CBS reported it was focusing its SAP efforts on compliance with FCC requirements for Audio Descriptive Services for the visually impaired. And NBC responded that it saw no need for Spanish simulcasts of its network news in light of its plans to purchase Telemundo. Like CBS, NBC is focusing its SAP efforts on Audio Descriptive Services. While Pavlik and Pavlik provided an interesting discussion of what broadcasters might do with digital capability, the purpose of this study is to begin to find out what broadcasters actually are planning.

Method

The authors of this study set out to explore what plans, if any, television station managers in markets with significant Hispanic populations are making to use digital capabilities to compete in multiple languages. Are decision-makers at stations that currently broadcast solely or primarily in English considering ways to use multicasting to serve the Spanish-language market? Conversely, are decision-makers at stations that currently broadcast solely or primarily in Spanish considering ways to use multicasting to serve the English-language market? Digital television has the capability to allow programming to flow either direction and to allow licensees to split their channels into services that target audiences previously beyond their reach. But are they making plans to use this capability to bridge the language gap?

This study was intended to begin to provide answers to the following questions:

1. Are television broadcasters in the largest Hispanic markets making plans to use multicasting capabilities to provide programming in both English and Spanish? The authors expected that in these markets, at least, some station managers would be likely to be considering this possibility, at least to the extent of dubbing some or all of their programs from English to Spanish or from Spanish to English.
2. Are managers at stations that currently broadcast only in English or mostly in English more likely to be planning to begin multicasts in Spanish than their counterparts at stations that broadcast only or mostly in Spanish to begin multicasts in English? Given the dramatic growth of the Hispanic population, the authors expected that English-language stations would be more likely to be planning for Spanish-language broadcasts than would Spanish-language stations to be planning for English-language broadcasts.
3. Are broadcasters more likely to be planning to provide news in another language than to provide entertainment programming in another language? Based on those instances where stations have already begun to use SAP and the difficulty of making entertainment, particularly comedy, "work" across cultural and language barriers, the authors expected that news and information

programs would be more likely than entertainment programs to be provided in a second language.

A questionnaire was designed to explore whether and how managers plan to use digital technology to broadcast in a second language. (A copy of the questionnaire is attached as Appendix A). It asked television managers deemed most likely to lead and implement programming decisions at their stations during the transition to digital whether they are "very likely" or "not very likely" to use multicasting capability for various kinds of programming in English and Spanish. Those managers surveyed included General Managers, Chief Engineers, Program Directors and News Directors at all stations in Nielsen's Top Ten Hispanic Markets.[72] Surveys were mailed to 572 managers at 143 stations, based on addresses listed in *Bacon's TV/Cable Directory, 2001*. A total of 68 responses were received, for a response rate of 12%. Of the total responses received, 48 (71%) came from managers at stations broadcasting only or mostly in English. Twenty responses (29%) came from managers at stations broadcasting only or mostly in Spanish.

The data reported here are preliminary. Few stations are on the air with their digital signals, and for most the pressing concerns of finding a transmitter site and purchasing and installing equipment can be expected to take priority over programming plans. In fact, given the origins of the conversion to digital (government-mandated, rather than market-driven), it might be expected that compliance, rather than creative innovation, is uppermost in the minds of most station managers. In fact, when choosing which managers to survey, the authors decided that although Chief Engineers may not normally play a part in programming decisions, the transition to digital is still primarily in the hands of engineers. What engineers consider technically feasible may well play a significant part in early programming decisions using the new technology. However, the authors hope to follow up this initial survey once construction of more digital facilities is completed and more consumers have themselves made the transition to digital. At that point, programming and business strategies will have been more fully developed.

Findings

The highest number of responses came from Chief Engineers, who returned 25 (37%) of the total completed surveys. General Managers returned 23 (34%) of the total responses. Although the questionnaire focused on programming plans, only 15 Program Directors responded (22% of responses). Although there were specific questions about news and information programming, only four News Directors responded (6% of responses). There are many possible explanations for the composition of the responses. As discussed earlier, it is the authors' opinion that at the present time the transition to digital is still viewed as an engineering task that requires budget support, rather than as a programming opportunity that demands strategic program decisions. A number of respondents commented that they had not yet discussed plans for multicasting or were waiting for direction from group owners. As one respondent put it, "We have not yet been informed as to corporate's plans."

Of the General Managers who responded, few seemed to be considering using multicasting to cross the language divide. Those GMs who head stations that currently broadcast only in English indicated little interest in using multicasting for Spanish-language entertainment programs (only 16% said they were very likely to do so). The same 16% said their stations were likely to use multicasting for Spanish-language news. For GMs at Spanish-language stations, the numbers were even more striking. None of the respondents said they were likely to use multicasting for English-language entertainment or news. Among GMs at stations that currently broadcast in mostly English and some Spanish, half said they were likely to use multicasting to provide more Spanish-language news or entertainment. However, none of the GMs at those stations that currently broadcast in mostly Spanish and some English had plans to use multicasting to provide more English-language news or entertainment.

Among Chief Engineers, the results were similar. About 14% of Chief Engineers at stations that currently broadcast only in English said it was very likely that their stations would use multicasting for Spanish-language entertainment. About 21% thought their stations might use multicasting to add Spanish-language news. None of the Chief Engineers at stations that currently broadcast only in Spanish thought it very likely that their stations would use multicasting to add English-language entertainment or news. Among Chief Engineers at stations that currently broadcast mostly English and some Spanish, about 60% said their stations were likely to use multicasting to add Spanish-language entertainment programs, and about 20% of this group said their stations were likely to use multicasting for more Spanish-language news. (No responses were received from Chief Engineers at stations broadcasting mostly in Spanish with some English.)

Among Program Directors for English-language stations, only 20% said it was very likely that their stations would use multicasting to add Spanish-language entertainment or news. Among Program Directors for Spanish-language stations, none thought it very likely that their stations would use multicasting to add English-language entertainment or news. Among Program Directors for stations currently broadcasting mostly English and some Spanish, 40% said it was very likely that their stations would use multicasting to add

Spanish-language entertainment programs, and about 60% thought it very likely that their stations would use multicasting to add more Spanish-language news. (No responses were received from Program Directors at stations that broadcast mostly Spanish and some English.)

Among the two News Directors responding from English-language stations, one thought it very likely that his station would use multicasting to add Spanish-language entertainment and news. The sole News Director responding from a mostly English/some Spanish station said it was very likely his station would add more English and Spanish news and entertainment. The sole News Director responding from a Spanish-language station did not think it very likely that his station would use multicasting to add English-language news. There were no responses from News Directors at stations that currently broadcast mostly Spanish/some English.

Of General Managers at English-language or mostly English-language stations, about a third said it is likely their stations will use multicasting to offer their current programs dubbed into Spanish. None of the GMs at Spanish-language or mostly Spanish-language stations said their stations were likely to use multicasting to offer current programs dubbed into English.

Among Chief Engineers at English-language stations, only 14% said it was very likely their stations would use multicasting to offer current programs dubbed into Spanish. That percentage was higher (about 20%) among Chief Engineers at stations that currently broadcast mostly English and some Spanish. Among Chief Engineers at Spanish-language or mostly Spanish stations, none said it was very likely that multicasting would be used for current programs dubbed into English.

Of Program Directors at English-language stations, about 20% said it was very likely that multicasting would be used for current programs dubbed into Spanish. None of the Program Directors at Spanish-language stations said it was very likely that multicasting would be used for current programs dubbed into English.

Of the News Directors responding, none from either English-language or Spanish-language stations said it was likely that multicasting would be used for programs dubbed into another language.

Spanish-language television managers on the whole appeared to be more enthusiastic about the prospects of digital for expanding offerings in their own language. Among GMs at Spanish-language stations, 89% said it was very likely that multicasting would be used to offer more Spanish-language entertainment and news. All of the GMs responding from stations currently broadcasting mostly Spanish/some English said it was very likely they would use multicasting to expand their Spanish-language entertainment and news programming. Among GMs at English-language stations, only about 50% said it was very likely they would use multicasting to expand their English-language offerings and only about 33% said they would use multicasting to add more English-language news. Among GMs at stations that currently broadcast mostly English/some Spanish, 66% said it was very likely they would use multicasting to add more English-language entertainment and news programs.

Among Chief Engineers at Spanish-language stations, 86% said it was very likely they would use multicasting to add more Spanish-language entertainment and news. Among Chief Engineers at English-language stations, about 43% said it was very likely they would use multicasting to add more English-language entertainment programs and about 29% said it was very likely that they would use multicasting to add more English-language news. There were no responses to these questions from Chief Engineers at mostly Spanish stations, but among Chief Engineers at mostly English stations, about 25% said it was very likely that they would use multicasting to add more English-language entertainment or news.

Among Program Directors from Spanish-language stations, 100% said it was very likely that they would use multicasting to add more Spanish-language entertainment and news. Among Program Directors from English-language stations, about 80% said it was likely they would use multicasting to add English-language entertainment programming, about 60% that they were likely to use multicasting to add more English-language news. There were no responses from Program Directors at mostly Spanish stations. Among those Program Directors from mostly English stations, 40% thought it was very likely that they would use multicasting to add more English-language entertainment and about 60% thought it was very likely they would use multicasting to add more English-language news. The sole News Director responding from a mostly English/some Spanish station said it was very likely that his station would use multicasting to add both English and Spanish news and entertainment.

Of the two News Directors from English-language stations, only one said it was very likely that his station would use multicasting for either more English-language entertainment or news. The sole News Director responding from a Spanish-language station said it was very likely that his station would use multicasting to add more Spanish-language entertainment and news.

Some of the respondents thought it very likely multicasting would be used for home shopping services. Again, the percentage of Spanish-language managers who thought this a very likely use of multicasting was significantly higher than the percentage of English-language managers who thought it very likely. Among Spanish-language Program Directors, half thought it very likely that multicasting would be used for Spanish-language home shopping. Among Chief Engineers for Spanish-language stations, about 28% thought it very likely that multicasting would be used for home shopping in Spanish. At English-language stations, only Chief Engineers thought home shopping in English was a very likely use of multicasting at their stations—and only 14% of them thought so.

Two Chief Engineers for English-language stations responded that their stations would use multicasting for data services, but did not specify in which language(s) such services might be offered. Another Chief Engineer for an English-language station and a News Director from a mostly English/some Spanish station said multicasting would be used for educational programs for children and adults, some of which would be in Spanish. A Program Director for a mostly English station said it would produce documentaries, magazine shows and other news and information specials in both English and Spanish, and another Program Director for a mostly English station said it might make use of some children's programming in Spanish. Another Program Director for an English-language station said it had plans for a children's channel, an education channel, a news-information-public affairs channel, a Florida channel and a PBS simulcast, but did not specify the language(s) to be used. A General Manager for a mostly English station said it had plans to use multicasting for PBS programming and local educational, arts and cultural service, but did not specify in which language(s). Another GM at an English-language station said it would multicast all urban programming (music and youth oriented programming), but did not indicate in which language(s). Multiple respondents reported that their stations had no plans to multicast or that there had been no discussions about plans to multicast. One respondent, a Chief Engineer at an English-language station, probably summarized best what many managers appear to believe: "The business model for DTV is not at all clear—the technical advantages are obvious. How it will affect revenue streams is not."

Discussion and Conclusion

It appears that managers of some English-language stations in the largest Hispanic markets are considering using multicasting to add Spanish-language news and entertainment or to offer their current programs dubbed into Spanish. However, the percentage of managers at English-language stations who appear prepared to cross the language divide in search of new audiences is by no means a majority. Among GMs at English-language stations, only half see multicasting of Spanish-language entertainment as very likely, and only about a third think it is very likely that multicasting will be used to add Spanish-language news programs or to offer current programs dubbed into Spanish. Among Chief Engineers at English-language stations, the percentages are much smaller—only about 14% see adding Spanish-language entertainment or dubbed programs as a likely use of multicasting, and only about 21% predict Spanish-language newscasts will be added. Fewer Program Directors at English-language stations (only 20%) seem as confident as GMs that multicasting is likely to be used for Spanish-language entertainment or current programs dubbed into Spanish or to add Spanish-language news. Based on the limited responses of News Directors at English-language stations, only one of two think it very likely that multicasting either Spanish news or entertainment was very likely.

Among Spanish-language managers, none appear to think that multicasting will be used to cross over into English—either to add English-language entertainment or news or to offer current programs dubbed into English.

These preliminary results may indicate only that it is too early to tell what the transition to digital will mean for the English/Spanish program divide. Right now, most stations may be too preoccupied simply with the logistics and costs of building and equipping their digital facilities to be able to consider the opportunities that digital may ultimately present. Certainly consumers have not yet made the investment in digital in significant enough numbers to warrant ambitious multilingual responses from broadcasters.

However, if conclusions may be drawn from these preliminary and limited survey results, these appear to be the answers to the questions posed.

1. Are television broadcasters in the most important Hispanic markets making plans to use multicasting capabilities to provide programming in both English and Spanish?

Among English-language broadcasters in the Top Ten Hispanic Markets, a significant number, but not a majority of managers have plans to use digital capabilities to cross the language divide. Spanish-language managers universally appear to be intent on expanding their Spanish-language offerings and to have no plans to cross over into English.

2. Are managers at stations that currently broadcast only in English or mostly in English more likely to be planning Spanish-language multicasting than their counterparts at stations that broadcast only or mostly in Spanish?

As predicted, managers of English-language stations appear more likely to have plans for multicasting in Spanish than do Spanish-language managers for multicasting in English. Survey results support the theory that the dramatic growth of the Hispanic population in the U.S. has made Hispanics "the new consumers" that English-language broadcasters want to reach. However, the reverse does not seem to be true of Spanish-language broadcasters, who appear convinced that loyalty to Spanish will continue to be robust and that their audiences will not disappear any time soon as the result of assimilation.

3. Are broadcasters more likely to provide news programs in another language than to provide entertainment programming in another language?

Results of the survey did not support the expectation that news programs in Spanish or in English were a more likely cross-language use of multicasting than entertainment programs. Neither GMs, Chief Engineers, Program Directors nor News Directors at English-language stations considered multicasting of Spanish-language news more likely than multicasting of Spanish-language entertainment. Indeed, among Chief Engineers at mostly English stations, about twice as many thought it very likely that multicasting would be used for more Spanish-language entertainment as for more Spanish-language news. Only Program Directors at mostly English/some Spanish stations thought multicasting was more likely to be used for more Spanish-language news (60%) than for more Spanish-language entertainment (20%). None of the managers at Spanish-language or mostly Spanish stations saw any likelihood of using multicasting to add either entertainment or news in English.

As it now stands, a significant number of managers of English-language stations appear to be interested in Spanish-language multicasting, but they are not in the majority. Managers of Spanish-language stations appear to have no interest at all in programming in English. As American television makes the transition to digital, English-language and Spanish-language television stations continue to live in parallel, but separate, worlds--with little interest yet in crossing the language divide.

Notes

[1] John V. Pavlik and Jackie Oregel Pavlik, "It's Booming: Spanish-language TV in the USA," *Television Quarterly,* 1998, XXIX:4, 23.

[2] Compare, for example, "Special Report: The coming of age of Hispanic broadcasting," *Broadcasting & Cable*, 3 April 1989, 37-51, to the magazine's "Special Report: Hispanic Broadcasting & Cable," six years later, 9 January 1995, 40-52, and again six years later, "Special Report: Hispanic Television," 1 October 2001, 32-26, for insight into the industry's changing view of Hispanic television as it went from marginal to mainstream.

[3] Mimi Whitefield, "Businesses go after Hispanics," *Miami Herald*, 16 November 2001, (C)3.

[4] Steve McClellan, "Special Report, Hispanic Television: What Downturn?" *Broadcasting & Cable*, 1 October 2001, 23. These states include California, Texas, New York, Florida, Illinois, Arizona and New Jersey. In New Mexico, there are fewer than a million Hispanics, but they make up over 42% of the state's population.

[5] David L. Geary, Ph.D., "The PR Implications of Census 2000," *The Public Relations Strategist*, Fall 2001:7:4, 12.

[6] Nielsen Media Research, *Nielsen Hispanic Television Index Fact Pack – 2001*, 2.

[7] Geary, "PR Implications of Census 2000," 12.

[8] Mimi Whitefield, "Mining the Market: Hispanic consumers hold promise, purchasing power," *Miami Herald*, 17 October 2001, (C)1.

[9] Whitefield, "Businesses go after Hispanics," (C)3.

[10] Whitefield, "Mining the Market," (C)1.

[11] Mimi Whitefield, "Selecciones counters magazines' slowdown: Reader's Digest in Spanish full of ads," *Miami Herald*, 20 March 2002, (C)4.

[12] Whitefield, "Selecciones," (C)4.

[13] Whitefield, "Selecciones," (C)4.

[14] Whitefield, "Selecciones," (C)4.

[15] Whitefield, "Mining the Market," (C)4.

[16] McClellan, "Special Report" *Broadcasting & Cable*, 1 October 2001, 22.

[17] Rachel Katz, "Kmart ads target minorities," *Miami Herald*, 26 March 2002, (C)3.

[18] Katz, "Kmart," (C) 3.

[19] Joe Schlosser, "Networks forgo March fetes," *Broadcasting & Cable*, 11 March 2002, 20-21.

[20] Schlosser, "March fetes," 20-21.

[21] Schlosser, "March fetes," 21. See also Steve McClellan, "Wright of Passage," *Broadcasting & Cable*, 11 March 2002, (A)14; Mimi Whitefield, "Telemundo purchase OK'd," *Miami Herald*, 11 April 2002, (C)1.

[22] Steve McClellan, "Univision speaks Barry's lingo: $1.1B," *Broadcasting & Cable*, 11 December 2000, 18.

[23] "*Nuestra* WUVG," *Broadcasting & Cable*, 21 January 2002, 21.

[24] Steve McClellan, "TeleFutura is now: New Univision network appears to tap a new audience," *Broadcasting & Cable,* 21 January 2002, 17. Whether TeleFutura is attracting viewers from English-language television or from Univision, however, is a matter of considerable debate (Mimi Whitefield, "TeleFutura claims disputed: Whose viewers are they winning?" *Miami Herald*, 9 February 2002, [C]1), as is the question of TeleFutura's value to Univision Communications (Daniel Chang, "Firm downgrades rating for Univision," *Miami Herald*, 22 March 2002, [C]3). In May 2002 the VP and General Manager at Univision's Miami Channel 23 was replaced by the former GM at Telemundo's Miami station, at least in part because of disappointment over Telefutura's performance in Miami, it was suggested in the press. Daniel Chang, "Station changes execs," *Miami Herald*, 7 June 2002, (C) 1.

[25] Mimi Whitefield and Daniel Chang, "Telemundo in transition," *Miami Herald*, 13 October 2001, (C)1.

[26] Daniel Chang, "*Betty* fans savoring the ugly end," *Miami Herald*, 1 March 2001, (A)1.

[27] Chang, "*Betty* fans," (A)2.

[28] Chang, "*Betty* fans," (A)2.

[29] Chang, "*Betty* fans," (A)2.

[30] Chang, "*Betty* fans," (A)1.

[31] Chang, "*Betty* fans," (A)1.

[32] Whitefield and Chang, "Telemundo in transition," (C)1.

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[33] Allison Romano, "Checking the Census," *Broadcasting & Cable*, 1 October 2001, 32.

[34] Romano, "Checking the Census," 32.

[35] Steve McClellan, "Room for *tres*?" *Broadcasting & Cable*, 4 December 2000, 26.

[36] McClellan, "Special Report," 30.

[37] Whitefield, "Businesses go after Hispanics," (C)3.

[38] "Topeka *en espanol*," *Broadcasting & Cable*, 22 October 2001, 28.

[39] Vickie Cachere, "Cable News Channel launches Spanish operation in Tampa," *Miami Herald*, 4 March 2002, (A)4.

[40] Cachere, "Cable News Channel," (A)4.

[41] Romano, "Checking the Census," 34. Interestingly, in April 2002 Home Shopping Network announced it would end Home Shopping Español after a three-year, multimillion-dollar investment. Apparently, Hispanic viewers prefer to shop in English, a finding that "flies in the face of the reigning philosophy of Spanish-language media that Spanish speakers want their own niche channels." Jane Busey, "Home Shopping Español network is signing off," *Miami Herald*, 18 May 2002, (C) 1.

[42] "Penalty Phase, " *Broadcasting & Cable*, 13 May 2002, 4.

[43] Bill McConnell, "DTV: Put up or pay up," *Broadcasting & Cable*, 25 March 2002, 10, quoting Tony Vinciquerra, President of Fox Television.

[44] Dan Trigoboff, "Fritts to nets: Come back," *Broadcasting & Cable*, 10 April 2002, 10.

[45] Nielsen, *NHSI Fact Pack*, 3.

[46] Nielsen Media Research, *Nielsen Hispanic Station Index Fact Pack – 2001*, 5.

[47] Nielsen, *NHSI Fact Pack*, 6.

[48] Romano, "Checking the Census," 32.

[49] Romano, Checking the Census," 32.

[50] Nielsen, *NHSI Fact Pack*, 6.

[51] Geary, "PR Implications of Census 2000," 12.

[52] Nielsen, *NHSI Fact Pack*, 2.

[53] Nielsen, *NHTI Fact Pack*, 3.

[54] Nielsen, *NHTI Fact Pack*, 3..

[55] Nielsen, *NHTI Fact Pack*, 3.

[56] Nielsen, *NHTI Fact Pack*, 3.

[57] Pavlik and Pavlik, "It's Booming: Spanish-language TV," 18.

[58] Terry Jackson, "Prime-time network TV programs under-represent Hispanics, new study says," *Miami Herald*, 23 September 1999, (A)12.

[59] Glenn Garvin, "A Different Take," *Miami Herald*, 27 March 2002, (E)6. This percentage, though far below the percentage of Hispanics in the U.S. population, was up from only 1% in 1994, according to a study by the Center for Media and Public Affairs cited by Garvin in the same article ([E]6) and 3% in 1999, according to a study by TN Media, a New York-based advertising agency (Jackson, "Prime-time network TV programs," [A] 12).

[60] Mimi Whitefield, "Fewer TV, movie roles are going to Hispanics," *Miami Herald*, 2 June 1999, (A)10, quoting Clara Rodriguez, professor of sociology at Fordham University's College at Lincoln Center, speaking at a 1999 Miami meeting of the Hispanic Association on Corporate Responsibility.

[61] Robin Dougherty, "TV perpetuates negative images of Hispanics, study finds," *Miami Herald*, 12 June 1996, (D)5.

[62] Dougherty, "TV perpetuates negative images," (D)5, quoting Roberto Vizcon, News Director, Telemundo's Channel 51, Miami.

[63] McClellan, "Special Report," 30.

[64] Nielsen, *NHSI Fact Pack*, 2. Percentages of Hispanic Households that are Spanish Dominant are based on 2001 figures. All other figures are based on 2002 Nielsen data, a reported in McClellan, "Special Report," 30.

[65] Nielsen, *NHSI Fact Pack*, 2.

[66] Nielsen, *NHSI Fact Pack*, 2.

[67] Nielsen, *NHSI Fact Pack*, 2.

[68] Dan Trigoboff, "Focus Yuma: Straddling two worlds," *Broadcasting & Cable*, 2 February 2002, 23.

[69] Pavlik and Pavlik, "It's Booming: Spanish-language TV," 18-23.

[70] Pavlik and Pavlik, "It's Booming: Spanish-language TV," 23.

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[71] Pavlik and Pavlik, "It's Booming, Spanish-language TV," 22.
[72] Nielsen, *NHSI Fact Pack*, 2.

Appendix A

Please take a few minutes to answer some questions about your station's plans for the transition to digital television. Your responses will be used for purposes of academic research on the transition to digital television, and neither you nor your station will be identified in compiling or reporting results of this survey. We appreciate your help.

1. What is your position?

_____General Manager
_____Chief Engineer
______News Director
______ Program Director

2. Which of the following best describes the language in which you currently provide programming?

______All English
______Mostly English/some Spanish
_______All Spanish
________Mostly Spanish/some English

3. If you plan to use your digital signal to broadcast multiple channels at least some of the time, which of the following uses are you most likely to make of additional channels?

	Very likely	Not very likely
(a) More Spanish language entertainment	_______	________
(b) More English language entertainment	_______	________
(c) More Spanish language news	_______	________
(d) More English language news	_______	________
(e) Our current programs dubbed into English	_______	________
(f) Our current programs dubbed into Spanish	_______	________
(g) Home shopping in English	_______	________
(h) Home shopping in Spanish	_______	________

Other (please briefly describe): ____

____

Please return by mail (prepaid envelope enclosed) or fax to: **(305) 919-5215**

Professor Humberto Delgado/Professor Lorna Veraldi
Florida International University
Department of Journalism and Broadcasting
Biscayne Bay Campus
North Miami, FL 33181

A Multiplicity of Problems in Digital Must-Carry

by
Daphne Eilein Landers
Ph.D. Student
College of Journalism & Communications
University of Florida

2735 SW 35th Place, Unit 105
Gainesville, FL 32608
(352) 271-9533
edec@bellsouth.net

A paper submitted for review to the Communication Technology and Policy Division of the Association for Education in Journalism and Mass Communication for possible participation in the 2002 Annual Convention Program.

Abstract

This paper focuses on the implications that multiple signals/services inherent in digital television broadcasting introduce into cable carriage of local commercial television stations. It raises two main research questions: (1) What are the implications of multiple signals on the must-carry rules? (2) What do these implications reveal about the constitutionality of digital must-carry rules? Three main issues are addressed: capacity issues, duplicative programming, and primary signal/program-relatedness. Each issue reveals the conflicts between any variant of the digital must-carry rules and the First Amendment.

Digital television broadcasting (DTV) promises sharper, wider, better, and more pictures. In some areas across the country, DTV already is delivering on those promises. But DTV also is delivering problems. The primary stakeholders in the transition to DTV, namely broadcasters and cable system operators, have divergent views on how to carry out this transition into the digital environment. They do not question the possibilities inherent in DTV; those already can be seen. They question each other's roles and responsibilities in the DTV landscape.

This is not the first problem between cable system operators and broadcasters. However, the relationship was not initially troublesome. From its inception in the late 1940s, community antenna television (CATV) - cable television's predecessor - merely transmitted local television signals via coaxial cable to distant and isolated communities for a minimal fee. Initially, broadcasters were elated; a larger audience translated into increased revenue. The relationship started to change once cable system operators began to import distant signals via high-frequency, microwave antennas. The distant signals increased competition and started to drive a wedge between broadcasters and cable system operators. Such resentment would be the start of a long-fought battle that is currently carrying into the DTV transition.

As the nation enters into a new DTV landscape, this touchy relationship between cable system operators and broadcasters is increasingly exacerbated. The digital environment revives old dilemmas and introduces new predicaments. A specific new predicament regards television broadcasters' multiple digital signals/services vis-à-vis cable system operators' current must-carry obligations. As the DTV transition deadline approaches, the FCC has before it a range of issues - new and old - with which to contend. It is within this context that this research paper focuses on one of the primary issues facing cable system operators and broadcasters in the impending DTV multiple signal/service landscape - digital must-carry.

This paper examines the multiplicity of problems inherent in digital must-carry. Section I contains a brief history of cable regulation and legislation. Specific emphasis is placed on the original must-carry rules and on the Cable Television Consumer Protection and Competition Act of 1992. The Supreme Court's two decisions regarding original must-carry rules are reviewed, with special attention given to the Court's opinion that must-carry rules are content-neutral and consistent with the First Amendment. Section II discusses digital television broadcasting. This section provides an overview of the transition process to DTV. It also presents the opportunities inherent in the new digital landscape, namely multiple signals/services. Section III follows with an analysis of digital must-carry and multiple signals with regard to the First Amendment. Three specific issues - channel capacity, duplicative programming, and primary signal/program-relatedness - are raised. Each issue addresses the conflicts between digital must-carry and the First Amendment. Section IV concludes and reiterates why digital must-carry is unnecessary and potentially unconstitutional, that is, it violates cable system operators' First Amendment rights. That violation is indeed content-based and does not further a compelling government interest.

Brief History of Cable Regulation and Legislation

The digital must-carry proposal is the DTV variation of the original must-carry rules, which will be discussed below. However, a long line of legislation and regulations has preceded this current proposal. With regard to the relationship between cable and broadcast television, these rules have had one major goal: the preservation of free, over-the-air broadcast signals for people who cannot afford cable television (Quincy v. FCC, 1985). Initially, the FCC did not exert its authority over CATV, claiming the technology did not use the public airwaves and was not under its jurisdiction (Quincy v. FCC, 1985). The FCC perceived probable danger to broadcasting's further development only after broadcasters began to protest that CATV was siphoning programming. Hence, the Commission began to exert its jurisdiction over CATV as early as 1962 in Carter Mountain Transmission Corporation v. FCC, insisting that regulation of CATV was necessary to ensure broadcasting's successful future. Importation of a distant signal, the FCC reasoned, could lead to the demise of the local broadcasting station (K. Cooper, 1993; F.L. Smith, 1990; US: Cable Television).

Three years later, the FCC issued its First and Second Cable Television Report and Orders (R&Os). These rules provided for the protection of local broadcast television signals. The FCC mandated signal carriage of television signals on all cable systems, whether or not served by microwave; nonduplication of programming; and limitations on the importation of distant signals. The Supreme Court subsequently upheld and affirmed the FCC's jurisdiction over cable television. In its 1972 Cable Television R&O, the FCC softened some of the previous rules regarding signal importation and nonduplication but maintained the signal carriage requirement (Quincy v. FCC, 1985; Cable Television Fact Sheet; J. Cooper; K. Cooper; F.L. Smith; US: Cable Television).

Twelve years later, the Cable Communications Policy Act of 1984 deregulated cable rates and streamlined the entire franchise renewal process. But for one regulation, cable television was essentially a liberated industry. In effect, this must-carry rule served to establish a safeguard for local, over-the-air broadcast television signals and was highly controversial.

The original must-carry rules, as established by the first and second cable television R&Os, mandated full carriage of all local television signals within 35 miles of the system's respective community. This regulation included all stations in the same television market and all stations "significantly viewed in the community" (Quincy v. FCC). Cable system operators claimed First Amendment violations, but the FCC denied the claims. In Quincy v. FCC (1985), however, the United States Court of Appeals for the District of Columbia Circuit concluded that the must-carry rules were "fundamentally at odds with the First Amendment and, as currently drafted, can no longer be permitted to stand" (p. 4). The court maintained that the FCC had failed to prove that cable television was a real threat to broadcasting's success and that the must-carry rules were not narrowly tailored "to justify their [FCC] substantial interference with First Amendment rights" (p. 38).

By 1992, however, cable's influence had grown and over 60 percent of American households subscribed to cable services (US: Cable Television). Politicians, industry officials, and public interest groups decried cable's excessive market power. Congress then enacted the Cable Television Consumer Protection and Competition Act of 1992 (1992 Cable Act). In addition to re-regulating cable rates and imposing ownership and access rules on cable systems, the Act revived the must-carry rules. This time, the Act requires cable systems to allot up to one-third of their channel capacity to local television stations' signals (including low-power and non-commercial stations). Once the one-third allotment is filled, cable system operators are free to choose which local stations - if any more - they will carry.[1] The Act also includes two carriage stipulations. The carried signals have to be in their entirety, including primary video and accompanying audio and closed captioning information. If the station includes program-related content in the vertical blanking interval (VBI),[2] that information also is classified as must-carry.

Also included in the 1992 Cable Act was a retransmission consent policy, whereby cable operators could not retransmit the signal of a local broadcast television station without the station's prior consent and compensation. A broadcast station was given the option of choosing either must-carry or retransmission consent in three-year intervals. Were the cable operator and the broadcaster not to reach an agreement on retransmission consent, the station would not be carried for the next three years; then it would be free to choose again which option it would apply to its signal (R&O Adopting 1992 Cable Act Rules, 58 FR 17350). By establishing must-carry and retransmission consent, Congress advocated three interrelated interests: "(1) preserving the benefits of free, over-the-air local broadcast television, (2) promoting the widespread dissemination of information from a multiplicity of sources, and (3) promoting fair competition in the market for television programming" (Turner v. FCC, sect. III-A).

Clearly, the 1992 Cable Act would turn out to be a highly controversial issue for both cable system operators and for broadcasters. Although the rules differed from the original must-carry rules, cable operators nevertheless challenged the constitutionality of the must-carry rules all the way to the Supreme Court (Turner Broadcasting System, Inc., et al., Appellants v Federal Communications Commission, et al., 1994 [Turner I]). The Court upheld the District Court's standard of scrutiny regarding the must-carry rules. The appellants (cable operators) argued the rule interfered with their speech and warranted strict scrutiny because it was content-based. However, the Court maintained the rule was content-neutral[3] and consistent with the First Amendment, under an intermediate standard of scrutiny set forth in United States v. O'Brien. "Under O'Brien, a content-neutral regulation will be sustained if it furthers an important governmental interest that is unrelated to the suppression of free expression and the incidental restriction on alleged First Amendment freedoms is no greater than is essential to the furtherance of that interest" (Turner v. FCC, 1994, sect. III-A). The Court's content-neutrality decision claimed the distinction between speakers (broadcasters versus cable system operators) was not based on content but on "the recognition that the services provided by broadcast television have some intrinsic value [4] and, thus, are worth preserving against the threats posed by cable" (Turner v. FCC, 1994, sect. II-C). The Court, however, considered the record insufficient regarding the narrowness of the must-carry rules. It vacated the District Court's judgment and remanded the case for further proceedings.

The District Court conducted additional fact-finding and again granted summary judgment in favor of the government. On direct appeal (Turner Broadcasting System, et al., Appellants v. Federal Communications Commission et al., 1997 [Turner II]), the Supreme Court affirmed, 5 to 4, the District Court's ruling. The must-carry rules furthered important governmental interests set forth in the Cable Act. The rules did not burden substantially more speech than necessary, the Court maintained, and were narrowly tailored. The Court granted substantial deference to Congress' justification for the must-carry rules.

Hence, the must-carry rules set forth in the 1992 Cable Act and upheld in Turner I & II form the current framework under which digital television broadcasting will evolve.

Digital Television Broadcasting

The Telecommunications Act of 1996 delineates the transition process to digital television broadcasting (DTV). The FCC officially began the transition process in 1996 by assigning existing broadcasters a new DTV license and an additional six megahertz (MHz) of spectrum. Broadcasters retain their current six MHz analog spectrum, in addition to the six MHz digital spectrum. Broadcasters will have until the transition deadline, 2006, to determine how best to use their digital spectrum. By retaining the analog spectrum and a consistent revenue stream, broadcasters have the flexibility to experiment with the digital spectrum, purchase necessary and relevant equipment, and develop programming (Charting the Digital, 1998).

The FCC also has implemented a graduated transition schedule, whereby affiliated stations in larger markets (1-10) must transmit a digital signal by May 1, 1999. "The same network affiliates in markets 11 through 30 must be on the air by November 1, 1999. All other commercial stations must be on the air by May 1, 2002" (Charting the Digital, 1998, p. 9). The schedule also includes a graduated simulcast requirement, beginning in 2003. Broadcasters will simulcast their analog signal with their digital signals until the transition is complete. The FCC recently has revised some of its original DTV transition rules to speed up the entire process. (FCC Acts to Expedite, 2001). Notwithstanding, several stations already have filed for extensions or waivers to the aforementioned deadlines.

This DTV transition schedule marks the trajectory to a new, enhanced communications environment. DTV provides more than the current analog system: more resolution lines, more of a viewable picture area, more pictures, more options. DTV also provides broadcasters with a variety of business opportunities; the main offering, however, revolves around multiple signals/services.

Broadcasters have several DTV transmission alternatives. High-definition television, or HDTV, is one of them. HDTV allows broadcasters to transmit twice the picture resolution and six times more data than that of an analog signal. The result is a better and wider picture, with enhanced audio (Charting the Digital, 1998). For broadcasters to transmit an HDTV signal, they must use the entire six MHz digital spectrum allotted to them.

Using the entire allotted spectrum for one enhanced signal may not be very profitable for broadcasters, however. Instead, they can offer a variety of services in that six MHz. One broadcaster, for example, can transmit - in place of a single HDTV signal - five digital standard definition television (SDTV) signals. These SDTV signals are far more enhanced than the current national television standards committee (NTSC) signal and allow the broadcaster to multiplex programming. In place of one video output, for example, a broadcaster can transmit five channels of programming.

In addition to providing more television signals, broadcasters may provide interactive video and data services. These "ancillary and supplementary" services include subscription television programming, computer software distribution, data transmissions, interactive services, paging services, classified advertising, and other revenue-generating services. These options are not mutually exclusive. A broadcaster may choose to offer these services simultaneously or to alternate services throughout its broadcast day. It can supplement video services with data, music, purchasing options, etc. It also can time-shift its services throughout its multiple channels, thereby allowing consumers to watch a given program on another of its channels if he/she missed it at a specific time and place (Charting the Digital, 1998).

Multiple Signals, Digital Must Carry, and the First Amendment

Whereas the analog environment mainly focuses on a single, primary signal (video with accompanying audio), the digital television environment introduces multiple signals and services. These innovations are not available within the analog environment. Hence, this multiplicity of signals/services is the main implication of digital television broadcasting, as it pertains to cable carriage. This paper focuses on the implications of DTV's multiple signals/services on cable carriage of local commercial television stations. It raises two main research questions:

RQ1. What are the implications of multiple signals on the must-carry rules?

RQ2. What do these implications reveal about the constitutionality of digital must-carry rules?

The subsequent discussion attempts to answer these questions by analyzing digital must-carry against the current statutory framework. Some scholars (Geller, 1995) claim the Court was remiss in classifying the must-carry rules as content-neutral regulation, hence subject to intermediate scrutiny, when the rules are, in fact, based on content. This paper accepts the position that digital must-carry, similar to the original must-carry rules, is a content-based regulation. The discussion will show further that, although the digital must-carry issue must be evaluated against the current statutory framework, the must-carry framework itself is flawed and has little place in the digital context.

This new digital landscape, of which multiple signals is a major part, introduces three issues vis-à-vis current must-carry regulation. These include channel capacity issues, duplicative programming, and primary signal/program-relatedness. Both cable system operators and broadcasters have divergent views as to how these issues should be managed in the DTV transition and thereafter. Broadcasters maintain that cable operators must carry both the analog and digital signals during the transition. Cable operators contend they are not required to carry both signals (First R&O, 2001, ¶ 10). This section, therefore, seeks to explain the three issues and to present what actions the FCC recently has taken to compensate for the new dimensions of DTV services. First Amendment implications also are discussed, revealing that digital must-carry indeed refers to content and deserves a heightened level of First Amendment scrutiny.

Channel Capacity

The current analog must-carry rules rely on a cable system's usable activated channel capacity to determine the carriage obligations of cable operators. The 1992 Cable Act defines activated channels as "channels engineered at the headend of a cable system for the provision of services generally available to residential subscribers of the cable system, regardless of whether such services are actually provided" (Quoted in R&O Adopting 1992 Cable Act Rules, 58 FR 17350, ¶ 7).[5] The FCC has adopted this definition for DTV, but it concedes there are difficulties in calculating channel capacity for must-carry purposes in the digital context. Changes in compression technology and transmission modes (between HDTV and SDTV), for example, may alter a cable system's channel capacity (First R&O, 2001, sect. V-A ¶ 39).

Based on the current statutory framework, the crux of any variant of the current must-carry regulations must rest on this notion of a cable system's usable activated channels. In Turner II, the Court found cable operators had not been adversely affected by must-carry impositions. Cable operators satisfied their must-carry obligations 87 percent of the time by simply filling previously unused channels. Five percent of cable systems nationwide were forced to drop an average of one service from their programming (sect. 2-B). Whereas one programming service drop-rate may seem minimal, it nonetheless entails interference with a cable operator's editorial discretion. A cable operator is forced to choose which programmer to carry on its system. This editorial discretion is further complicated in light of recent technological developments within the cable industry.

Over the past several years, cable system operators have invested billions of dollars to upgrade and enhance their infrastructure with the goal of offering interactive services. These enhanced services, the FCC has decided, are included in the definition of "usable activated channels" for must-carry purposes (First R&O, 2001, sect. V-A ¶ 41). This inclusion of enhanced services in the definition of "usable activated channels" has resulted in conflict. Broadcasters maintain cable operators' obligations to local television must be maintained, despite their investment in other services. Cable operators, on the other hand, insist they are channel-locked, in light of allocation of resources to other services, and cannot increase capacity for obligatory carriage purposes. They claim cable operators stand to lose billions of dollars if they are forced to displace enhanced services for more local broadcast television signals (Legislative Affairs, 2001). Broadcasters oppose cable operators' claims, insisting recent infrastructure upgrades preclude cable operators from claiming channel-locked status (Reply Comments of NAB/MSTV/ALTV, 2001).

Nonetheless, transitional digital must-carry places a grave imposition on cable operators' channel capacity, and hence on their editorial autonomy. As far back as Quincy v. FCC (1985), the district court acknowledged "the interference with Quincy's [cable operator] editorial autonomy, a value protected by the First Amendment, does not disappear with an increase in channel capacity" (note 28). Quincy abolished the original must-carry rules, and Turner upheld a revised version of the rules. Ironically, in Turner, the Court asserted that the must-carry provisions did "interfere with cable operators' editorial discretion by compelling them to offer carriage to a certain minimum number of broadcast stations" (Turner I, 1994, sect. II-C). Those burdens, the majority opinion insisted, were content-neutral, not based on the programmer's content. The minority opinion, on the other hand, affirmed the content-based nature of the rules.

"Preferences for diversity of viewpoints, for localism, for educational programming, and for news and public affairs all refer to content" (Turner I, 1994, minority opinion sect. I-A). Despite the obvious link to content and the preference for locally-originated programming, the Court deferred to Congress' findings.

However flawed the Court's decision to classify must-carry under the classification of content-neutrality, the current rules do serve as the basis for reviewing the DTV transition and the relationship between cable system operators and broadcasters. Albert Lung (2000) maintains, "[I]n light of the Court's liberal interpretation of content-neutrality, a DTV must-carry scheme will be regarded as content-neutral and subject only to intermediate scrutiny . . . . [T]he rule will be a direct product of the analog must-carry scheme" (Sect. IV-A ¶ 1-online). Based on this current framework, then, any digital must-carry imposition, where cable operators are obligated to carry more than one signal/service of each local television broadcaster, thereby precluding carriage of some non-local programming, undermines cable operators' autonomy and editorial discretion. These burdens on channel capacity are magnified in the digital context, where each broadcasters has the newfound possibility of transmitting multiple signals. These burdens indeed are based on a preference for supposed value of local television content.

Duplicative Programming

The 1992 Act establishes a substantial duplication policy regarding carriage of local broadcast television stations. "A cable operator shall not be required to carry the signal of any local commercial television station that substantially duplicates the signal of another local commercial television station which is carried on its cable system, or to carry the signals of more than one local commercial television station affiliated with a particular broadcast network" (Section 614-B-5). Substantial duplication, for these purposes, denotes simultaneous broadcasting of identical programming for at least 50 percent of a broadcast week. In the analog context, the concern has focused on inter-station duplication. The digital environment, however, shifts the focus of this substantial duplication requirement from an inter-station emphasis to intra-station duplication.

Some scholars (Lung, 2000) and industry participants (NPRM DTV Carriage, FCC 98-153 sect. IV-H ¶ 70) suggest the substantial duplication policy does not apply to signals originating from within any given station. The legislative phrasing, they say, identifies signals from "another" station, not signals from "within" a station. Hence, carriage of broadcasters' digital signals is not within the constraints of this substantial duplication policy, and all of a local broadcaster's signals must be carried. It is important to note, however, that before the transition to DTV, multiple video signals originating from a single station were not technologically possible. DTV's multiple signals/services introduce this new dimension. Focusing on the source of the duplication, instead of the duplication itself, further eclipses cable operators' rights. Duplicative programming is duplicative, regardless of its source. Whether inter-

or intra-duplication, the essence of this policy also relates to the reproduction of local content.

Duplication increases in significance during the latter part of the DTV transition. April 1, 2003, begins a graduated simulcasting requirement, where local broadcast stations must simulcast at least 50 percent of their analog transmission in digital. In 2004, the simulcast requirement increases to 75 percent, and by 2005, stations must simulcast 100 percent of their analog signal. One hundred percent simulcasting continues until the stations return their analog channel to the government in 2006 (NPRM DTV Carriage, FCC 98-153). Based on the substantial duplication policy, it is apparent that the FCC's simulcasting requirements may be in direct conflict with said policy (Lung, 2000). The FCC's own rules contradict themselves, in that must-carry rules call for non-duplication based on content, while demanding a simulcasting requirement that essentially duplicates the content of the analog programming stream. In effect, both the must-carry rule's substantial duplication policy and the simulcasting rule both pertain to content.

The substantial duplication policy, therefore, has First Amendment implications that multiply in the digital arena. Ironically, the FCC proclaims the virtues of the substantial duplication policy, asserting it strives "to preserve a cable operator's editorial discretion while ensuring that the public has access to a diversity of local television signals" (First R&O, 2001, sect V-D, ¶ 66). It is unclear how the FCC purports to preserve cable operators' editorial discretion by placing limits on the content cable operators are free to carry on their systems. The FCC itself acknowledges that "cable operators could be required to carry double the amount of television stations, that will eventually carry identical content, while having to drop various and varied cable programming services where channel capacity is limited" (NPRM DTV Carriage, FCC 98-153). It is also unclear how the FCC claims to ensure a diversity of voices in the marketplace when its substantial duplication policy limits the number of players to whom particular communities may be exposed. In light of the incongruities in its own rules, the FCC has reaffirmed the importance of resolving these duplicative programming concerns. However, it has reserved rulemaking in this regard until it receives further definitive information (First R&O, 2001, sect. V-D, ¶ 69).

Primary Signal/Program-Relatedness

The duplicative programming issue raises another concern regarding which of the multiple signals is the primary video. The 1992 Cable Act requires cable operators to carry a broadcaster's entire primary video signal, along with any accompanying audio and closed captioning information (sect. 614, 3-A). Whereas in the analog context, the primary video classification is rather straightforward, the digital context's multiple video streams and transmission options pose a more difficult distinction. The primary video distinction essentially calls for a classification of programming content.

The FCC says the statutory language regarding primary video implies there is content within the signal that is not subject to carriage. The analog signal produces one "video broadcast product," and even within this analog context, the FCC maintains, not all of a broadcaster's signal is entitled to carriage (First R&O, 2001, sect. V-C ¶ 47). It stands, therefore, to reason, by extension of the current statutory framework, that not all of a digital broadcaster's video content will be subject to carriage. When a broadcaster decides to offer multiple streams of programming, instead of one single HDTV signal, there must be a distinction between which service constitutes primary video for carriage purposes. The FCC adheres to the common dictionary definition of "primary" as "'First or highest in rank, quality, or importance' and 'Being or standing first in a list, series, or sequence' " (First R&O, 2001, sect. V-C ¶ 54). The FCC thus has concluded that one video stream constitutes primary video. The FCC further has designated it as the digital broadcaster's responsibility to classify which video stream is its primary video (First R&O, 2001, sect V-C ¶ 54).

This primary video designation also is essential to establishing that the must-carry rules - and any digital must-carry rule - are content-based regulations. FCC Commissioner Susan Ness dissents in part with this single-stream interpretation of primary video: "[It] could have the odd result of requiring broadcasters and cable operators to continuously examine broadcasters' content to determine whether the signal is primary video, program related, or something else" (First R&O, 2001, sect. II - dissenting).

In addition to carrying the digital broadcaster's primary video, cable operators must carry program-related content. Traditionally, program-related content (such as closed captioning) has been included in the vertical blanking interval, but the VBI does not exist in DTV. The FCC has revised the VBI information in the current statute to coincide with the new DTV landscape. In place of the VBI, stations more likely will provide program-related content via data applications (First R&O, 2001, sect. V-C, ¶ 60).

DTV's multiple services introduce non-broadcast-related content, such as data and interactive services. These data streams, according to the FCC, may or may not be program-related (First R&O, 2001, sect. V-C ¶ 48). These ancillary and supplementary services are not mentioned in the 1992 Cable Act; however, Section 336 of the Telecommunications Act of 1996 makes reference to such advanced television services; it maintains that "no ancillary or supplementary service shall have any right to carriage" under the must-carry rules (NPRM DTV Carriage FCC 98-153, 1998, sect. IV-J ¶ 72). The DTV Fifth R&O defines these ancillary services as "any service provided on the digital channel other than free, over-the-air services" (Quoted in First R&O, 2001, sect. V-C ¶ 59). DTV, as mentioned above, provides broadcasters the opportunity to engage in computer software distribution, data transmissions, interactive materials, aural messages, paging services, subscription video, and a panoply of other ancillary and supplementary, fee-based services. The FCC has concluded that these ancillary and supplementary services are not entitled to mandatory carriage in the digital arena (First R&O, 2001, sect. V-C ¶ 59). Hence, the only content that is considered program-related for the purposes of must-carry include "closed captioning information, program ratings data for use in conjunction with the V-chip functions of receivers, Source Identification Codes ("SID Codes") used by Nielsen Media Research in the preparation of program ratings, and the channel mapping and tuning protocols that are part of PSIP"[6] (First R&O, 2001, sect. V-C ¶ 61). All of these designations refer to content.

In order for non-primary video content to be considered program-related, it must pass the three-part test enumerated in WGN Continental Broadcasting v. United Video (693 F.2d 622). First, the same viewers who are watching the primary video must be the ones to which the broadcaster directs the content. Second, the content must be available in concurrence with the primary video. Third, the content must be essential to the primary video (693 F.2d 622; First R&O, 2001, sect. V-C ¶ 61). The broadcaster must prove the ancillary services meet all three criteria in order to classify as program-related content and entitled to carriage. Similar to the primary video designation, the program-relatedness test also relies solely on content for digital must-carry purposes.

It is plain to see that every critical aspect of the must-carry rules and of any transitional digital must-carry rule places undue restrictions on cable operators' editorial discretion and that this restriction is indeed based on content. Such restrictions call for a heightened level of First Amendment scrutiny.

Conclusion

Based on the preceding discussion, one can easily see the multiplicity of problems inherent in digital must-carry. Carriage of broadcasters' multiple signals and service options places undue burdens on cable operators' channel capacity. Those burdens are indeed content-based, giving preference to local content over cable network programmers' content. Furthermore, the simulcasting requirement of the DTV transition process and the FCC's attempts at remedying this inconsistency with its substantial duplication policy highlight the content-based flaws in original must-carry legislation. Moreover, the primary video designations the FCC has established - along with the program-relatedness distinctions - reveal that every aspect of must-carry legislation applies to giving preferential treatment to local broadcasters' content.

Nevertheless, the Court upheld such an obvious First Amendment violation. Henry Geller (1995) proposes that the Court's minority opinion "found that the must-carry provisions meet a legitimate, but not a compelling, government interest and, therefore, would not survive strict scrutiny analysis" (¶ 28). The Court, Geller claims, accorded substantial deference to Congress - its co-equal branch - to avoid "a fourth round on the must-carry controversy" (¶ 16). Had the Court found must-carry to be content-based, as indeed it is, it would have encountered various difficulties with the strict scrutiny analysis. The Court would have had to demonstrate that the must-carry rules were narrowly tailored to meet a compelling government interest to justify its interference with cable system operators' First Amendment freedoms.

DTV's multiple signals/services expose the inherent flaws in the original must-carry rules. Even the President's Advisory Committee on Public Interest Obligations of Digital Television Broadcasters (1998) maintains multiple digital signals "allow[s] broadcasters to compete with other multichannel media such as cable and direct broadcast satellite systems" (p. 4). DTV broadcasters' signals resist degradation. "The primary reason cable systems began carrying broadcast signals was to eliminate broadcast signal degradation and deliver better pictures to their subscribers over longer distances. Digital transmission provides a perfect picture to a set" (Donahue, Allen, and Larsen, 2000, p. 42).

In addition to the resistance to degradation, DTV signals also place broadcasters on almost an equal footing with other television programming options. Some might say that until DTV, broadcasters could not profitably compete in the video marketplace. In order to compete with MVPDs and to remain viable alternatives for people without the resources to pay for MVPD service, must-carry rules were deemed necessary to ensure that broadcasters' unique signal would not deteriorate. The reality of that assertion is suspect. In the new DTV landscape, however, DTV's multiple digital signals/services increase broadcasters' viability as a programming alternative; broadcasters now have the capabilities to offer multiple services and signals somewhat comparable to other MVPDs. Research shows (Ferguson and Perse, 1993) that despite the vast array of channels or services a distributor offers, viewers form "channel repertoires" and watch only a small set of channels repeatedly. Broadcasters now have even more resources to offer viewers.

The must-carry laws have been in existence now for almost a decade. They were established to protect local television content in the face of burgeoning competition. The analog environment may or may not have necessitated such a regulation. Nevertheless, Brown (2002) maintains that these rules "provide an excellent historical illustration of how content regulation may be justified under the guise of content-neutrality and economic livelihood" (p. 21). DTV now has entered the picture, and the government insists on transferring, in one way or another, the must-carry rules into DTV.[7] The FCC has tentatively concluded that "based on the existing record evidence, a dual carriage requirement appears to burden cable operators' First Amendment interests substantially more than is necessary to further the government's substantial interests" (First R&O, 2001, ¶ 3). It is evident that if a digital must-carry rule fails to pass muster under the intermediate-scrutiny test, it surely will fail review under the more appropriate strict scrutiny test.

Harris Aaron (2000) reveals the main problem with digital must-carry: "the . . . problem is symbolic of a larger issue facing the FCC, the Congress, and the judicial system in this country - the problem inherent in applying old laws to new technologies. This is a difficult dilemma that will undoubtedly persist as technological advances outrun legal adaptations" (Conclusion section, ¶ 2 - online). Hence, as technology grows, the marketplace must learn to adapt to the new opportunities that such advances present. Regulators should encourage - and allow - the market to address these changes voluntarily and independent of regulations. Already, major multiple cable system operators (MSOs) have engaged in voluntary carriage and retransmission consent agreements with broadcasters across the country (Halonen, 2002; LaFayette, 1999; Remarks of Michael S. Willner, 2001). If broadcasters develop programming that is valued by their respective communities and is inimitable by competitors, cable system operators will experience the consumer demand pulling broadcasters' unique program services onto the cable lineup. Donahue, Allen, and Larsen (2000) believe "[d]igital technology eliminates the need for the awkward and potentially unconstitutional relationship between cable and broadcasters" (p. 42).

In all, digital television broadcasting overflows with multiple technological possibilities. However, transferring old, ill-conceived, and inapplicable rules to DTV restricts those possibilities. It merely serves to revive old problems in light of a new technological and marketplace landscape.

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Endnotes

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[1] Cable systems with fewer than 12 channels were obligated to carry the signal of at least three television stations If the cable system with 12 or fewer channels had less than 300 subscribers, it was exempt from the must-carry obligations.

[2] "Also called vertical blanking, the interval of time when the [television] scanning retraces from the bottom back to the top of the screen. During the vertical interval, the picture is blanked. The vertical interval includes sync pulses, and when used for broadcasts, often contains network information, and test and closed captioning signals." *Adobe Technical Guides: Glossary of Digital Video Terms.* Online. http://www.adobe.com/support/techguides/digitalvideo/dv_glossary/V.html. Accessed November 12, 2001.

[3] Restrictions on alleged First Amendment freedoms may fall into either of two categories: content-neutral regulations or content-based regulations. Content-neutral regulations are unrelated to the content of what a speaker says. Content-based regulations restrict speech based on what the speaker says or does not say. Content-based regulations are unconstitutional and can only be sustained if they are narrowly tailored and serve a compelling government interest. "Restrictions on Fully-Protected Speech, Part II." *CyberSpace Law Institute, Social Science Electronic Publishing.* Online. http://www.ssrn.com/update/lsn/cyberspace/csl_lessons.html. Accessed November 12, 2001.

[4] This paper will show that this claim of television's value does, in fact, pertain to a speaker's content, thus requiring strict scrutiny under the First Amendment.

[5] Usable activated channels include activated channels that do not pose technical or safety hazards ("Report and Order in the Matter of Adoption of Rules needed to Implement Mandatory Television Broadcast Signal Carriage and Retransmission Consent Provisions of the Cable Television Consumer Protection and Competition Act of 1992." 58 FR 17350 ¶ 7).

[6] PSIP stands for "program and system information protocol. This is the standard protocol for transmission of relevant data tables, describing system information and event descriptions, contained within digital packets carried in the digital broadcast transport stream multiplex. System information allows navigation of, and access to, each of the channels within the transport stream, whereas event descriptions give the user content information for browsing and selecting. . . . PSIP allows the broadcaster to customize information to guide viewers to channel numbers they are familiar with" (R&O 01/2001 ¶ 49).

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[7] The FCC has proposed seven alternatives all related to DTV. The Immediate Carriage Proposal requires full carriage, regardless of channel capacity constraints, of all of a station's signals. The System Upgrade Proposal requires cable systems to carry stations' signals as the system upgrades its infrastructure and as the stations start to transmit digital programming. The Phase-In Proposal requires cable systems to carry stations signals on a graduated basis. The Either-Or Proposal requires compromise between must-carry and retransmission consent for any number of the signals. The Equipment Penetration Proposal relies on the market area's equipment penetration rate to determine carriage. The Deferral Proposal defers signal carriage until a later date. The No Must Carry Proposal asserts that digital must-carry does not apply during the transition period. (R&O 01/2001 ¶ 41-50).

<Communication Technology and Policy Division>

Copyright Policy in the Digital Age:

"Fair Use" of Circumvention Technologies

Presented at the AEJMC 85th Annual Convention, Aug 7-10, 2002, Miami, FL

SEUNG EUN LEE

Doctoral Student
College of Journalism and Communications
University of Florida
Gainesville, FL 32608
Office: (352) 392.2273
Home: (352) 331.1163
E-mail: leeseung@ufl.edu

Abstract

This paper explores how the fair use doctrine, as an exception to the right of copyright owners, can apply in digital environment. For this purpose, this study examines how the courts have interpreted fair use exemption in the reverse engineering cases since the Copyright Act of 1976. This paper especially focuses on the question of what public policy motivations can be found in the court opinion in the cases involving fair use exception to the copyright holder's right. The review of court decisions involving reverse engineering and the Digital Millennium Copyright Act's anti-circumvention provision claims shows that fair use should be applied as a flexible mechanism for adapting copyright law to the digital environment.

I. Introduction

The rapid creation and expansion of the digital environment have presented new challenges to traditional legal conceptions of copyright. In the digital environment, the encoding of any type of expression in digital form preserves perfect quality in every subsequent copy, even when duplicated and distributed many times. Storing content in digital form, copyright owners imposed technological barriers in order to create an artificial scarcity that would prevent the otherwise unobstructed propagation of information and art.[1] For example, the improved quality of a movie in a digital format brings with it the risk that a virtually perfect copy can be readily made at the click of a computer control and instantly distributed to countless recipients throughout the world over the Internet. Media and entertainment industries perceive the Internet and digital technology in general as a threat to their exclusive right to distribute and make copies of the copyrighted works they own. Before releasing their copyrighted works onto the Internet, these companies insist on a legal framework that supports the technological protection systems they have developed.[2]

On the other hand, educational institutions, consumer advocates, and information technology companies are concerned that the implementation of these technological protection systems may result in an imbalance between the protections afforded to copyright owners and society's access to information. They argue for a flexible legal framework that encourages access to information fostered by the open infrastructure of the Internet.[3]

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[1] F. LAWRENCE STREET & MARK P. GRANT, LAW OF THE INTERNET, 586-589 (2001).

[2] For example, movie industry uses the Content Scramble System ("CSS") as the technological protection system. CSS is an encryption scheme that employs an algorithm configured by a set of keys to encrypt a DVD (Digital Versatile Disk)'s content.

The Digital Millennium Copyright Act of 1998 ("DMCA") sought to balance these conflicting interests. Section 1201 of the DMCA, sometimes called the anti-circumvention provisions, prohibit the access and duplication of copyrighted works through circumvention of technological protections imposed by the copyright owner.[4]

At the heart of the debate over the interpretation of the DMCA is the survival of fair use as a defense against liability under the anti-circumvention provisions. The fair use doctrine is the attempt of the judiciary to balance copyright owner's right and society's interest in access to copyrighted work. Fair use, an exception to and limitation on copyright owner's right, is a defense against copyright infringement. Section 1201(c)(1) of DMCA explicitly states that "nothing in this section shall affect rights, remedies, limitations, or defenses to copyright infringement, including fair use."[5] However, the statute is criticized as ambiguous on the availability of the fair use defense for 1201 claims. Critics contend that the fair use is not an available defense for certain charges under the section 1201.[6]

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[3] For example, *see generally* LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD (2001) (arguing that open infrastructure functions as a kind of Freedom of Information Act of network regulation, and also criticizing movie industry's overly-sensitive attempts to impose technological protection where there is no likelihood of piracy).

[4] To 'circumvent a technological measure' means to descramble a scrambled work, to decrypt an encrypted work, or otherwise to avoid, bypass, remove, deactivate, or impair a technological measure, without the authority of the copyright owner. 17 U.S.C. §1201 (a)(3)(A) (2001). For instance, DeCSS is a circumvention technology that decrypts the DVD's CSS protection.

[5] 17 U.S.C. § 1201(c)(1) (2001).

[6] *See. e.g.* Jason Sheets, *Article: Copyright Misused: The Impact of the DMCA Anti-circumvention Measures on Fair & Innovative Markets*, 23 HASTINGS COMM.& ENT. L. J. 1, 6-7 (2000). *See also* Pamela Samuelson, *Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need to be Revised*, 14 BERKELEY TECH. L.J. 519, 524-36 (1999)

The purpose of this paper is to examine how the fair use doctrine can apply in digital environment involving circumvention technologies. This study examines how the courts have interpreted the fair use exemption since the Copyright Act of 1976. This paper especially deals with the question of what public policy motivations the court considered in the cases involving fair use. This paper focuses on the fair use cases related to reverse engineering.[7] Reverse engineering uses the circumvention technologies to access to digital technological protection system. For instance, the case such as *Universal City Studios, Inc. v. Reimerdes*[8] departs from the fact that a Norwegian teenager reverse-engineered a licensed DVD player and culled from it the information necessary to decrypt CSS, which is a technological protection system the movie industry imposed.

The DMCA recognizes reverse engineering as one of the exemptions from the anti-circumvention provisions. That means, the anti-circumvention provision allows the use of circumvention technology for reverse engineering when used to achieve inter-operability.[9] By reviewing the fair use cases involving reverse engineering, we can explore how the fair use of circumvention technologies would be applied under the DMCA's anti-circumvention provisions.

Literature Review

The DMCA, like the fair use clause in the Copyright Act of 1976, has received substantial criticism for its ambiguities and has been accused of creating an unfair balance between copyright owners and public interests. With passage of the DMCA, several scholars argued that the DMCA's anti-circumvention provision threatens the "delicate balance" the law strikes between copyright holders and members of the public who want to make use of copyrighted works. For example, Pamela Samuelson,[10] argued that the DMCA's anti-circumvention provisions are overbroad and unclear, especially on the question of whether it is legal to develop a technology necessary to engage in a fair use, which is a privileged act of circumvention. She concluded that either Congress or the courts will be forced to constrain the reach of the anti-circumvention rules so as not to undermine Congressional intent to preserve fair uses of copyrighted material, and so as not to harm competition and innovation in the information technology industry.

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[7] Reverse engineering is the process of starting with a finished product and working backwards to analyze how the product operates or how it was made. Fair use cases involving academia, research, or parody are not discussed in this paper. For reverse engineering, *see infra* discussion in part II B.

[8] 111 F. Supp. 2d 294 (S.D.N.Y. 2000) [hereinafter *Universal*].

[9] It is important for the information technology industry to make products that are interoperable with industry standards. *See infra* part II B.

Glynn S. Lunney[11] also argued that the DMCA's anti-circumvention provisions eliminated some key limitations copyright has traditionally imposed on the protection of creative works. Similarly, Sarah H. McWane[12] examined the copyright debate over the distribution of digital entertainment content over the Internet. She explored the ways in which the DMCA has strengthened copyright law, and how it effects the entertainment industry and ISPs. She concluded that those judicial decisions strengthened the law in favor of copyright holders.

While several scholars have argued that the courts, under the DMCA, ruled in favor of protecting owners instead of public interest, the fair use implications of reverse engineering cases were only addressed in part in the case comments of law review journals when the court decided each case.[13] Most of them reviewed an individual case opinion, and do not discuss broad public policy implications.This paper will consider the public policy implications in the use of circumvention technologies.

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[10] Pamela Samuelson, *supra* note 6, at 519 (1999).

[11] Glynn S. Lunney, Jr., *Article: The Death of Copyright: Digital Technology, Private Copying, and the Digital Millennium Copyright Act*, 87 VA. L. REV. 813 (2001).

[12] Sarah H. McWane, *Comment: Hollywood vs. Silicon Valley: DeCSS Down, Napster to Go?*, 9 COMMLAW CONSPECTUS 87 (2001).

Research Questions and Method

The following research questions will be addressed in this paper:

1. How have the courts interpreted the fair use doctrine in the cases involving reverse engineering since the Copyright Act of 1976? Which public policy rationale underlies the court decisions?
2. How have the courts interpreted fair use so far in the cases involving the DMCA's anti-circumvention provision? What are the public policy implications of the fair use under the digital environment?

This paper will use legal research methods. The court decisions examined in this study include three reverse engineering cases since the Copyright Act of 1976, and one anti-circumvention provision case after the passage of the DMCA.[14] This study focuses on the federal circuit court decisions. The cases involve the period of prior to and after the DMCA.

Part II of this paper examines fair use as an exemption and limitation to a copyright owner's right. This part discusses reverse engineering with regard to fair use.

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[13] *See e.g.* Stan Karas, *Fair Use: Sony Computer Entertainment, Inc. v. Connectix Corp.*, 16 BERKELEY TECH. L.J. 33 (2001); Brian Fitzgerald, *Innovation, Software, and Reverse Engineering*, 18 COMPUTER & HIGH TECH. L.J. 121(2001); Susan E. Dallas, *Computer Copyright Protection Narrows as Video Game Giants Battle in Atari* v. *Nintendo*, 71 DENV. U.L.REV. 739 (1994).

Part III explores the DMCA's anti-circumvention provisions and exemptions in the provision. Part IV examines four cases. First, it discusses the three cases involving reverse engineering as a fair use defense. Then the case involving the DMCA's section 1201 claims will be examined. Part V of this paper discusses the implication of the cases, and examines which public policy rationale underlies the each court's decision. Finally, part VI concludes that fair use should be applied as a flexible mechanism for adapting copyright law to the digital environment.

II. Fair Use as Exception to and Limitation on Copyright Owner's Right

A. Fair Use

Regardless of the copyright owner's will, others have a defense against copyright infringement if their use of the copyrighted work is within the bounds of "fair use." The fair use doctrine is the law's attempt to "strike a balance between the dual risks created by the copyright system: on the one hand, that depriving authors of their monopoly will reduce their incentive to create, and, on the other, that granting authors a complete monopoly will reduce the creative ability of others."[15] Fair use is an affirmative defense and the alleged infringer bears the burden of proof that the use is fair.[16]

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[14] *RealNetworks, Inc. v. Streambox, Inc*, No. C99-2070P. 2000 U.S. Dist. LEXIS 1889 (W.D. Wash. 2000) is the other case to test anti-circumvention provisions. But this is not included in this paper, because it is a trial court opinion.

[15] *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417, 479 (1984) [hereinafter *Sony*].

[16] *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569 (1994); *Harper & Row Publishers, Inc. v. Nation Enterprise*, 471 U.S. 539 (1985); *Sony*, 464 U.S. 417 (1984).

The fair use doctrine originated as a court tool to determine copyright cases that was codified to Copyright Act of 1976.[17] However, section 107 does not define fair use.[18] Instead, it provides illustrative fair use purposes and factors for the court to examine in each case, which include:

> (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
>
> (2) the nature of the copyrighted work;
>
> (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
>
> (4) the effect of the use upon the potential market for or value of the copyrighted work.

Courts have evaluated the particular use of copyrighted works in the cases according to the four statutory factors, tailoring their inquiry to the circumstances of each case. Courts are not, however, limited to the four enumerated factors, and a number of courts have considered additional factors where relevant.[19] Likewise, fair use and other exceptions to copyright owner's right might arise from courts' consideration of diverse circumstances in the digital environment.[20] For example, whiling applying the four factor tests, courts might consider the importance of fundamental constitutional rights,[21] public interest which is the main goal of copyright law,[22] and competition policy.[23] In addition, in times of rapid technological change, it may be difficult for Congress or legislatures to foresee what new technologies will arise, how they will be used and what copyright rules ought to apply. Courts in the United States have often employed the fair use doctrine as a flexible mechanism for balancing the interests of rights holders and of other parties in situations in which the legislatures have not indicated its intent.[24]

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[17] 17 U.S.C. § 107.

[18] *See Harper & Row*, 471 U.S., at 560 (1985) ("since the doctrine is an equitable role of reason, no generally applicable definition is possible, and each case raising the question must be decided on its own facts").

[19] *See* WILLIAM F. PATRY, THE FAIR USE PRIVILEGE IN COPYRIGHT LAW, 415 (2nd, 1995). Examples of other factors include defendant's good faith or lack thereof, *Harper & Row*, 471 U.S., at 562 (1985). In *Pacific & S.Co. v. Duncan*, 744 F.2d 1490, 1495 (11th Cir. 1984), the court also considered a governmental licensee's duty to "provide public access to newscasts."

[20] COMMITTEE ON INTELLECTUAL PROPERTY RIGHTS AND THE EMERGING INFORMATION INFRASTRUCTURE, COMPUTER SCIENCE AND TELECOMMUNICATIONS BOARD, COMMISSION ON PHYSICAL SCIENCES, MATHEMATICS, AND APPLICATIONS, NATIONAL RESEARCH COUNCIL, THE DIGITAL DILEMMA: INTELLECTUAL PROPERTY IN THE INFORMATION AGE, 135-140 (2000). [hereinafter the Committee]. This report is a result of research project hosted by Computer Science and Telecommunications Board, and supported by National Science Foundation. The report discusses the seven categories into which exceptions and limitations to copyright owners' rights seem generally to fall. The author considers four of these categories are relevant as public policy rationale for fair use.

B. Reverse Engineering

A closer question is presented whether the reverse engineering of computer programs through circumvention technology can be considered a fair use. Reverse engineering is the process of disassembling a finished product to uncover its functional components and to analyze how the product operates or how it was made. The Supreme Court has endorsed reverse engineering as a "fair and honest means [of] ... starting with the known product and working backward to divine the process which aided in its development or manufacture."[25]

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[21] A number of fundamental constitutional rights might provide a basis for a limited exception to copyright owner rights, including freedom of speech, freedom of the press, freedom of expression, or democratic debate. The committee perceived that given the robustness of criticism, news reporting, and public debate on the Internet, it would seem that fair use rules would likely have some application in the digital world, just as they do in the print world. *Id.* at137.

[22] For example, public interest exceptions to copyright permits performance of copyrighted works in nonprofit educational settings; those that enable libraries and archives to make copies for preservation, replacement, and other legitimate purposes, or those that enable copyrighted works to be used for distance learning. *Id.*

[23] Two examples of competition policy-based limitations in U.S. law are rules that impose compulsory license on owners of musical copyrights to enable further recordings of those musical works and on owners of rights in broadcast signals for passive retransmissions of the broadcast materials by cable systems. *Id.* at 138.

[24] *See e.g. Sony* (1984).

The knowledge gained through reverse engineering may be used for a variety of purposes, including the need to develop competing software, hardware peripherals such as laser printers, and inter-operable computers. Reverse engineering promotes the production of improved products and enhances competition. By acknowledging that reverse engineering can constitute a fair use activity, the courts create the possibility of market entry.

However, copyright owners often dislike reverse engineering because it can result in the development of competing products. Reverse engineering of software code requires intermediate copying.[26] Copyright owners who desire to restrict competition claim that those intermediate copies constitute infringement.[27]

Of particular importance to the information technology industry is the ability to make products that are interoperable with industry standards. For example, software applications require interoperability with software platforms so they can run smoothly together.[28] In apparent accordance with this tradition, the DMCA allows circumvention of technological protection measures in order to achieve interoperability.[29] Likewise, the

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[25] *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476 (1974).

[26] For an explanation of the process of reverse engineering of software, *see generally* Andrew Johnson-Laird, *Software Reverse Engineering in the Real World*, 19 U. DAYTON L. REV. 843 (1994).

[27] *Sega*, 977 F.2d at 1510.

[28] *See* American Committee for Interoperable Systems ("ACIS"), Comments on "Intellectual Property and the National Information Infrastructure," at 2-3 (Sept. 1, 1994), available at http://www.interop.org/greenComments.html. (last visited March 11, 2002).

[29] 17 U.S.C. § 1201(f).

DMCA recognizes reverse engineering as one of the exceptions to the anti-circumvention provisions.

III. Anti-circumvention Provisions of the Digital Millennium Copyright Act

A. Circumvention Technologies and the DMCA

Fearful that the ease with which pirates could copy and distribute a copyrightable work in digital form was overwhelming the capacity of conventional copyright enforcement to find and enjoin unlawfully copied material, Congress sought to combat copyright piracy in its earlier stages, before the work was even copied.[30] The DMCA therefore backed with legal sanctions the efforts of copyright owners to protect their works from piracy behind digital walls such as encryption codes or password protections. The example of circumvention technology is DeCSS, which is designed to circumvent "CSS," the encryption technology that motion picture studios place on DVDs to prevent unauthorized viewing and copying of movie.

The DMCA is the most recent legislation intended to modify copyright law in the face of new technologies. The DMCA was signed into law by President Clinton on October 28, 1998.[31] Title I of the DMCA[32] implements two treatises from the World Intellectual Property Organization ("WIPO)". The WIPO Copyright Treaty and the

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[30] H.R. Rep. No. 105-551, pt. 1, at 17 (1998).

[31] Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (Oct. 28, 1998) (codified at *17 U.S.C. § 1201); see also* The Digital Millennium Copyright Act of 1998: U.S. Copyright Office Summary available at http://lcweb.loc.gov/copyright/legislation/dmca.pdf (last visited Mar 4, 2002).

[32] Title II limits online service provider ("OSP") liability. Title III involves copying software in conjunction with computer maintenance and Title IV contains various miscellaneous provisions. Title V is the "Vessel Hull Design Protection Act." *See id.*

WIPO Performances and Phonograms Treaty require signatory countries to give foreign copyrighted materials at least the same protections as domestic copyrighted materials. Title I of the DMCA also contains the anti-circumvention provisions.[33]

B. Anti-circumvention Provisions of the DMCA

Section 1201 of the DMCA regulate the technology that cracks code that is intended to protect copyrighted material.[34] There are two parts to the provisions – one that restricts the *cracking* of code that protects copyrighted work, and one that forbids the *trafficking of technology or device* to crack code that protects copyrighted work. In other words, the first provision[35] prohibits the *act* of circumventing technological protection systems, while the second[36] ban *trafficking in technological devices* that facilitate the circumvention of access control or protection of the rights of the copyright owner. Although the second ban prohibit trafficking in a circumvention technologies, it consists of two subsections; the focus of subsection 1201 (a)(2) is circumvention of technologies designed to prevent *access to work,*[37] and the focus of subsection 1201 (b)(1) is circumvention of technologies designed to *permit access but prevent copying of the work or some other act that infringes a copyright.*[38]

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[33] 17 U.S.C. § 1201(a).

[34] 17 U.S.C. § 1201(a).

[35] 17 U.S.C. § 1201(a)(1)(A).

[36] 17 U.S.C. § 1201(a)(1), (b)(1).

[37] Congress intended this provision to be analogous to existing laws prohibiting the manufacture or distribution of "black boxes" whose function is to descramble cable television and satellite cable services. *See* H.R. Rep. No.105-551, pt.2. at 38 n.2 (1998).

[38] *See* S. Rep. No. 105-190, at 11-12 (1998).

C. Exemptions in the Anti-circumvention Provisions

The DMCA does provide some exemptions from the general prohibition on circumvention. It includes exceptions for schools and libraries that want to use circumvention technologies to determine whether to purchase a copyrighted product;[39] individuals using circumvention technology for the sole purpose of trying to achieve "interoperability" of computer programs through reverse engineering;[40] and encryption research aimed at identifying flaws in encryption technology, if the research is conducted to advance the state of knowledge in the field.[41]

Section 1201(f) purports to allow for reverse engineering of a product that has technological protection system. However, the exemption is criticized as being too narrow, because it does not allow reverse engineering for the production of non-infringing works that are not designed to be inter-operative.[42]

The statutory language of the DMCA is ambiguous on the availability of the fair use defense for 1201 claims. The only place where the term "fair use" appears is Section 1201(c). Section 1201(c) states that nothing in this section shall affect rights, remedies, limitations, or defenses to copyright infringement, including fair use. The question in the interpretation of this exemption is whether the defenses can be applied to violations of the anti-circumvention provisions or whether they only apply in the cases of copyright infringement. If the anti-circumvention provisions are distinct from copyright infringement, then defendants can be held liable for merely circumventing the copyright owner's technological measure for access control, even if their uses made out of the work are held not to infringe on the rights of the copyright holders.[43] While it may be true that defenses to copyright infringement are not altered, a violation of 1201 is not an infringement of a copyright. Therefore, the *Universal* court determined that defenses to copyright infringement probably do not apply to 1201 claims.[44]

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[39] 17 U.S.C. § 1201(d).

[40] 17 U.S.C. § 1201(f).

[41] 17 U.S.C. § 1201(g).

[42] *See* Jason Sheets, *supra* note 6, at 6-7 (2000).

IV. Analysis of Cases

1. Cases involving Reverse Engineering

Three cases have dealt with fair use exemption in the context of computer software reverse engineering. When confronting copyright infringement stemming from reverse engineering of software, all three court opinions have held that such copying constitutes fair use.

A. Atari Games Corp. v. Nintendo of America Inc.[45]

In Atari Games Corp. v. Nintendo of America, Inc., the Federal Circuit of the U.S. Court of Appeals excused Atari's copying of Nintendo software as fair use when it was necessary to obtain access to the software's functional elements.[46] This case involved Nintendo's 10NES software, which contained a security mechanism requiring the game console to detect a coded message on the video game cartridge in order to function. Atari, a video game manufacturer, used a copy of Nintendo's program to correct errors in its reverse engineering efforts and subsequently created its own software, the "Rabbit Program," to unlock the 10NES system. The result was to render the Atari Games' chip functionally indistinguishable from the Nintendo chip, thus precluding Nintendo from altering its future base units in a manner that would selectively exclude Atari Games' cartridges.[47] In other words, the program allowed Atari to produce video games that were not licensed by Nintendo but could still be played on the Nintendo game system.[48]

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[43] *See* Pamela Samuelson, *supra* note 6, 539 (1999).

[44] *See Universal City Studios, Inc. v. Reimerdes,* 82 F. Supp. 2d 211, 219 (S.D.N.Y. 2000) (court grants preliminary injunction and notes that the fair use defense is not available because there is no claim of copyright infringement in the 1201 action).

[45] 975 F.2d 832 (Fed. Cir. 1992)[hereinafter *Atari*].

The Federal Circuit held that Atari's reverse engineering was fair use as long as Atari did not copy beyond the point necessary to "learn" the unprotected ideas and processes embedded in 10NES software or commercially exploit Nintendo's protected expression.[49] The court recognized that the legislative history of the Copyright Act of 1976 suggests that courts should adapt the fair use exception to accommodate "new technological innovations."[50] The court further noted that the Act exempts from copyright protection reproductions for criticism, comment, or research and that those activities permit "public understanding and dissemination of the ideas, processes, and methods of operation in a work."[51] The court ruled against Atari on other grounds, but concluded that fair use as a valid defense in reverse engineering copyright suits.

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[46] This use of the fair use doctrine was dicta; the Federal Circuit upheld the lower court's preliminary injunction against Atari on the grounds that Atari acquired an unauthorized reproduction of source code from the U.S. Copyright Office, which negated any finding that Atari's reverse engineering was fair use. *Id.* at 841-42.

[47] *Id.* at 835.

[48] *Id.* at 836.

[49] *Id.* at 843.

[50] *Id.*

The federal circuit emphasized the importance of the public's understanding and dissemination of technology issues, and its decision therefore reflects the consideration of public interest.

B. Sega Enterprises v. Accolade, Inc.[52]

In *Sega Enterprises v. Accolade, Inc.*, the Ninth Circuit of the U.S. Court of Appeals held that Accolade's copying of Sega software is fair use. In *Sega,* during the process of creating video games to be played on Sega's console, Accolade copied and disassembled some of Sega's copyrighted software.[53] Accolade then printed and studied the disassembled code in order to produce Sega-compatible games.[54] The court held that creation of object code through disassembly constituted infringement but concluded that intermediate copying, such as Accolade's, was fair use.[55]

Applying the four factor test, the court admitted that Accolade's purpose in copying was purely commercial.[56] Nevertheless, the copying was fair use because it occurred at an intermediate stage of software development, and therefore Accolade's commercial exploitation of Sega's work was indirect.[57] Furthermore, Accolade's purpose was nonexploitative, since it disassembled Sega's code merely to study its functional requirements.[58]

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[51] *Id.*

[52] *Sega,* 977 F.2d 1510 (9th Cir. 1992).

[53] *Id.* at 1514.

[54] *Id.* at 1514-15.

[55] *Id.* at 1514.

[56] *Id. at 1522-23.*

[57] *Id.*

The court also reasoned that Accolade's games would not displace Sega's games in the market and that limiting the market for Sega-compatible games only to those produced or licensed by Sega would run counter to the goal of promoting creative expression embodied in copyright law.[59] The court wrote:

> In determining whether a challenged use of a copyrighted material is fair, a court must keep in mind the public policy underlying the Copyright Act…The ultimate aim is ... to stimulate artistic creativity for the general public good. The fact that computer programs are distributed for public use in object code form often precludes public access to ideas and functional concepts contained in those programs, and thus confers on the copyright owner a de facto monopoly over those ideas and functional concepts... .[60]

The court further emphasized that where there is good reason for studying or examining the unprotected aspects of a copyrighted computer program, disassembly for purposes of such study or examination constitutes a fair use.[61]

In summary, while applying the four factor test, the court consistently noted the ultimate aim of copyright law is to stimulate artistic creativity for the general public good. In addition, the court carefully considered that limiting the market for Sega-compatible games only to those produced or licensed by Sega would run counter to the goal of promoting creative expression embodied in copyright law. In this regard, public policy rationales such as the considerations of public interest and fair competition can be found in *Sega* decision.

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[58] *Id. at 1523.*

[59] *Id. at 1523-24.*

[60] *Id. at* 1523.

[61] *Id. at 1520.*

C. Sony Computer Entertainment, Inc. v. Connectix Corp.[62]

In *Sony v. Connectix*, the Ninth Circuit of the U.S. Court of Appeals concluded that Connectix's reverse engineering of an operating system program extracted from a Sony PlayStation console was protected fair use. Plaintiff Sony sued for infringement of the software program that operates Sony's PlayStation console. Defendant Connectix had made intermediate copies of Sony's software during the course of reverse engineering the software so that Connectix could make its Virtual Game Station emulator function with PlayStation games.[63] The Ninth Circuit held that intermediate copying for that purpose constituted fair use.[64]

Connectix's repeated copying of copyrighted elements of Sony's software did not constitute infringement because it was necessary to access the software's functional elements.[65] While the court's application of the fair use doctrine is consistent with precedent, the decision is significant because it permits reverse engineering of software in the process of creating a product that will compete directly with the original. The court reiterated its holding in *Sega* that harm to Sony's market in its PlayStation console arising from competition with the Connectix emulator does not count as market harm for fair use analysis.[66] To do so, the court emphasized, would be to extend copyright improperly to accord Sony a monopoly in the market for game-playing devices.[67]

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[62] 203 F.3d 596 (9th Cir. 2000) [hereinafter *Connectix*].

[63] *Id. at 59.*

[64] *Id.* at 596.

[65] *Id.*

The court's consideration of market harm and competition between the products is beyond the general scope of how courts have usually interpreted the "effect on potential market" factor of the fair use test.[68] Traditionally, the test dealt with a question of the effect of copying not only on the present market but also on the potential market for the copyrighted work. Accordingly, courts have found that fair use is limited to copying that does not materially impair the marketability of the work copied.[69] On the other hand, if the copying would tend to competes directly with, or supplants the original work in the marketplace, and therefore replace or reduce the amount of sales of the work copied, then it would not likely be considered a fair use.[70]

However, the court allowed the direct competition between the two products in this case. Therefore, it appears that the fair use exemption for Connectix largely results from the competition policy consideration.

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[66] *Id.* at 605.

[67] *Id.*

[68] 17 U.S.C.§ 107.

[69] In *Sony*, the majority and dissenters disagreed about how much home recording of copyrighted television programs might damage the commercial market for TV production studios. Holding the hometaping of copyrighted TV programs constitutes fair use, the majority concluded that the potential harm to the market for studio was merely speculative.

2. Case Involving the DMCA's Anti-circumvention Provision

Universal City Studios, Inc, v. Reimerdes

In *Universal City Studios, Inc, v. Reimerdes*,[71] the Southern District of New York ruled that the defendant Reimerdes' posting material to circumvent encrypted DVDs was a violation of the DMCA. The plaintiff Universal sued the operators of a web site for violation of the DMCA anti-trafficking provisions, arising out of Reimerdes' posting and linking to other sites that posted software known as "DeCSS."[72] Originally, Jon Johnsen, a Norwegian teenager reverse-engineered a licensed DVD player and gained information necessary to decrypt CSS. Johansen wrote a decryption program "DeCSS." In this case, the defendant Reimerdes posted this technology on his website.

Defendant Reimerdes argued that the DMCA should not be construed to reach their conduct, principally because the DMCA, so applied, could prevent users from gaining access to technologically-protected copyrighted works in order to make fair, non-infringing uses.

The court rejected Reimerdes' argument, holding that "there is no serious question that his posting of DeCSS violates the DMCA."[73] The court first determined that the DeCSS computer program is a means of circumventing a technological access control measure and is designed primarily to circumvent CSS. It then ruled that defendants'

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[70] *See e.g. Harper & Row*, 471 U.S. 529 (1985); *Wainwright Securities, Inc. v. Wall Street Transcript Corp.*, 558 F.2d 91, 2 (2d Cir. 1977), *cert denied*. 434 U.S. 1014 (1978).

[71] 111 F. Supp. 2d 294 (S.D.N.Y. 2000).

[72] DeCSS enabled users to circumvent "Content Scramble System (CSS)," a system of encrypted access and copying controls on DVDs.

posting violated the DMCA anti-trafficking provisions even if defendants intended for DeCSS to be used for arguably non-infringing uses, such as furthering the development of a DVD player that would run under the Linux operating system.

The anti-trafficking provisions, the court reasoned, prohibit the distribution of any device designed primarily to circumvent protected technological controls, regardless of whether the circumvention itself might be non-infringing.[74] The court recognized that some circumvention devices might be needed by users to engage in fair use of copyrighted material or to gain access to works in the public domain. Nevertheless, the court determined, the DMCA contains no general exception for trafficking in such devices.[75]

The Second Circuit affirmed the decision of the district court in *Universal City Studios v. Corely*.[76] The court determined the DMCA provisions are not susceptible to a narrow interpretation, notwithstanding alleged ambiguities raised by the appellants Corely in their constitutional challenge.[77]

Further, the court agreed with the district court that the DMCA's anti-trafficking provisions, as basis for enjoining appellants Corely from posting and hyperlinking to a computer program that allows users to decrypt and copy movies on DVD, does not unconstitutionally eliminate the fair use doctrine.[78] Without deciding whether fair use may in fact have constitutional protection, the court held that the fair use argument is

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[73] *Id. at 303-304.*

[74] *Id. at 319.*

[75] *Id.*

[76] 273 F.3d 429 (2d Cir.) (2001). Losing parties in this case filed Jan. 14 a petition for en banc review of the panel's decision.

[77] *Id.* at *18-22.

[78] *Id.* at *18-20.

beyond the scope of the lawsuit. It reasoned that the evidence as to the impact of the anti-circumvention provisions on prospective fair users is scanty and fails adequately to address the issue.[79] The court also noted the appellants have provided no support for their premise that fair use of DVD movies is constitutionally required to be made by copying the original work in its original format. That is, the Second Circuit noted there are a variety of traditional fair uses of DVD movies other than guaranteeing of access to copyrighted material in order to copy it by the user's preferred technique or in the identical format of the original.[80]

Critics argue the DMCA's reverse engineering exemption was interpreted too narrowly by the *Universal* court.[81] Likewise, the *Universal* court rejected the fair use exemption as defense under the DMCA.

V. Discussion

When confronting copyright infringement arising from reverse engineering of software, the three courts[82] have held that such copy constitute fair use. While applying the four factor test, the courts gave weight to certain element of the test. In *Atari*, the court concentrated on the purpose of Atari's copying of Nintendo. Therefore, the court emphasized the ultimate goal of copyright law is to serve public interest by permitting public understanding and dissemination of ideas.

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[79] *Id.* at *18-19.

[80] Id. *77-78 (stating "the DMCA does not impose even an arguable limitation on the opportunity to make a variety of traditional fair uses of DVD movies, such as commenting on their content, quoting excerpts from their screenplays, and even recording portions of the video images and sounds on film or tape by pointing a camera, a camcorder, or a microphone at a monitor as it displays the DVD movies").

[81] *See e.g.* Eddan Elizafon Katz, *Anti-circumvention provisions: Universal City Studio, Inc. v. Reimerdes*, 16 BERKELEY TECH L.J. 53, 68 (2001). *See also* Jason Sheets, *supra* note 6, at 18-19 (2000).

[82] *Atari*, *Sega*, and *Connectix* courts.

On the other hand, the *Connectix* court focused on the market harm factor of the fair use test. Its ruling turned out to allow Connectix to compete directly with Sony in its commercial market. Public policy considerations such as public interest and fair competition can be found in the *Sega* decision.

Universal is the first case to test the DMCA's anti-circumvention provisions. It is not possible to discuss public policy rationale for fair use in this cases, because the court determined fair use defense is denied under the DMCA. The *Universal* court distinguished the application of fair use to circumvention violations from copyright infringement claims. This decision raised the questions of whether fair uses of circumvention technology are permitted to innovators, researchers, and the general public.

The rulings above imply that while reverse engineering or other legitimate uses of circumvention technology are eligible for protection under the Copyright Act of 1976, the DMCA denies the fair use defense of those users of circumvention technologies. For instance, consider the options available to a potential market entrant who desires to pursue a fair use activity.[83] Prior to the DMCA, the market entrant could circumvent the technological lock and then risk copyright liability. This approach was followed by Accolade in the *Sega* case.[84]

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[83] *See* Jason Sheets, *supra* note 6, at 22-24 (2000).

[84] 977 F.2d 1510 (9th Cir. 1992).

After the DMCA, this option is foreclosed. If written today, the *Sega* decision would likely to result in the different outcome.[85] The copyright owner would sue the market entrant under 1201(a)(1) for circumventing an access restriction, 1201(a)(2) for manufacturing the device which was used to reverse engineer the console, and 1201(b) for manufacturing the device which was used to circumvent the technological system which protect the copyrights in the console. Accolade is likely to prevail on the 1201(a) claims, but lose on the 1201(b) claim.[86]

Likewise, the *Universal* decision has been criticized for broadly interpreting the ban on circumvention and narrowly applying the various exemptions and limitations within the statute. The critics contend that the cases demonstrate that such a strict understanding of the DMCA may lead to overprotection for copyright owners at the expense of public access to art and information.[87] From a public policy perspective, the anti-circumvention provisions might be used to block competition and the introduction of new technologies. A commentator's argument is noteworthy in light of competition policy.[88] He argues that, although the DMCA protects locks that were developed to and are primarily used to exclude unauthorized third parties from reverse engineering the owner's product, most 1201 claims will be levied against competitors, including competitors making non-infringing products.[89]

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[85] *See* Jason Sheets, *supra* note 6, at 23 (2000).

[86] Section 1201(a)(1) and (2) prohibit the circumvention of access controls and the manufacturing of devices designed to circumvent access controls, but Accolade's activities are likely to be exempt under 1201(f). However, 1201(f) does not allow the development of a technological means to circumvent a system that protects the rights of a copyright owner. Manufacturing devices that circumvent copy controls is prohibited by 1201(b) and Accolade's activities are not exempt from 1201(b) claims by virtue of 1201(f). In order to reverse engineer Sega's console, Accolade manufactures a device that bypasses a technological protection measure. If the technological measure that is bypassed by Accolade's device serves both as an access control and as a copy control, then Accolade will violate 1201(b).

[87] *See e.g.* Pamela Samuelson, *supra* note 6, at 533-34; Glynn S. Lunney, Jr., *Article: The Death of Copyright: Digital Technology, Private Copying, and the Digital Millennium Copyright Act*, 87 VA. L. REV. 813 (2001).

[88] *See. e.g.* Douglas L. Rogers, *Give the Small Players a Chance: Shaping the Digital Economy through Antitrust and Copyright Law*, 5 MARQ. INTELL. PROP. L. REV. 13, 108-109 (2001).

Indeed, if a company's fair use defense is denied simply because of using circumvention technologies, under the DCMA, this might give a great advantage to companies which are dominant in the current technologies. In this regard, the three reverse engineering cases showed the court decisions turned out to create the possibility of market entry, considering the competition policy and public interest.

VI. Conclusion

Fair use and other exceptions to copyright law derive from the fundamental purpose of copyright law and the concomitant balancing of competing interests among stakeholder groups. Although the evolution of the information infrastructure changes the processes by which fair use and other exceptions to copyright are achieved, it should not challenge the underlying public policy motivations. In this regard, the court decisions in the anti-circumvention case raises the question of whether fair use and other exemptions will continue to play a role in the digital environment. Therefore, the legislature and the courts should carefully determine how broad or narrow fair use can be and what other exceptions should apply in the digital environment. In fact, the DMCA does not provide any exemptions for circumventing technological protection systems for the purpose of engaging in parody, criticism, or news reporting.[90]

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[89] Jason Sheets, *supra* note 6, at 19 (2000).

[90] See Pamela Samuelson, *supra* note 6, at 521, 533-534 (1999) (arguing that the DMCA reflects Hollywood's preferences to the detriment of the public).

As the Committee[91] indicates, the appropriate scope of fair use may be reduced by the development of new licensing regimes enabled by the digital environment, where rights holders would license uses and copies of digital information. Even so, there needs to be public policy rationales for fair use that should not be overlooked. For example, courts might need to recognize the importance of public policy goals for ensuring constitutional rights, public interest, and fair competition in market. In addition, it is important for courts to distinguish between circumvention aimed at getting unauthorized access to a copyrighted work and circumvention aimed at making noninfringing uses of a lawfully obtained copy. The DMCA does not do this yet.

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[91] The Committee, *supra* note 20, at 136 (2000).

STATE THEORY AND TELECOMMUNICATIONS SURVEILLANCE POLICY:

THE EXAMPLE OF THE U.S. STATE'S CLIPPER CHIP INITIATIVE

Vandana Pednekar-Magal, Ph.D.
Assistant Professor
School of Communications
Grand Valley State University
Allendale, MI 49401-9401
email: pednekav@gvsu.edu
Tel: 616 895 3337

and

Peter Shields, Ph.D.
Associate Professor
Department of Telecommunications
Bowling Green State University
Bowling Green, OH, 43403, USA
email: pshield@bgnet.bgsu.edu
Tel: 419 372 8349

Submitted to: Communication Technology and Policy Division, AEJMC 2002

STATE THEORY AND TELECOMMUNICATIONS SURVEILLANCE POLICY: THE EXAMPLE OF THE U.S. STATE'S CLIPPER CHIP INITIATIVE

1. Introduction

In recent years, the surveillance imperatives of the U.S. State have come into sharp contradiction with the explosive expansion of the so-called "network economy." The worldwide growth of electronic commerce, and the perceived need for greater security of the information that traverses the global information infrastructure, is driving the development of a fast growing market for encryption technologies. This appears to be posing major control problems for law enforcement and national security agencies. For a decade now, the Federal Bureau of Investigation (FBI) and the National Security Agency (NSA) have expressed concern that the proliferation of strong private sector encryption is eroding their long-standing ability to intercept and monitor electronic communications. Without appropriate regulatory responses, the argument runs, drug traffickers, terrorists and the like will be able to operate with impunity and anonymity in "virtual" havens – this will be devastating to public safety and national security it is argued.

In 1993, the Clinton Administration launched its much-publicized "Clipper Chip" or key-escrow initiative in response to this ostensible crisis. The aim of the initiative was to guarantee law enforcement officials access to a set of "spare keys" that could be used to "unlock" encrypted electronic messages when authorized to do so. Beginning in the mid-1990s, attempts were also made to internationalize the Clipper Chip plan; the Clinton Administration engaged in efforts to persuade other governments and international organizations to adopt a global key-escrow encryption scheme. In the face of intense opposition, the plan was shelved in 1999.

In essence, the Clipper Chip initiative was a sustained attempt by the U.S. State to build its surveillance interests into the design of the evolving information infrastructure, at the national and international levels. But why did the initiative fail? After all, the national security establishment had dominated the formation of U.S. encryption policy for most of the twentieth century. The Clipper Chip initiative represented the NSA's first major defeat in this policy domain.

The primary objective of this article is to analyze the formation, promotion, and eventual demise of the initiative. At one level, an examination of this process can illuminate the ways in which the U.S. law enforcement and national security establishment struggled to build a new form of state-controlled national and transnational surveillance capacity.[1] The analysis can also shed light on the forces that blocked the realization of this objective. Together, such insights can provide the basis for assessing whether other ongoing and future attempts at building similar surveillance capacities are likely to succeed.[2] At another level, the Clipper Chip provides a lens through which to examine how traditional nation-state forms – law enforcement and national security agencies in this case – are struggling to reinvent themselves in the face of economic and technological forms that are global in scope.

The second objective of the paper is to contribute to a neglected area of telecommunication policy studies. Curiously, while the literature on telecommunication policy formation has much to say about the forces that shape policies associated with the economic and social functions of telecommunications networks (e.g., competition policy, universal service), it is silent on processes that shape policies associated with their policing function. This may have been defensible in the past but it is less so now given the recent surge of state telecommunications surveillance initiatives in the U.S. and other countries.[3] Our analysis begins to address this gap and so contributes to a more theoretically informed understanding of the full range of telecommunications policy processes.

2. Conceptual framework

Our analysis is guided by Vincent Mosco's conceptual work on the forces that shape telecommunications policy formation in the U.S. context (1988; also Rideout and Mosco, 1997). Certainly, there have been other attempts at theorizing these forces. Relevant works include Dutton (1992), Krasnow, Longley and Terry (1982), Parsons (1989), Shields (1995a, 1995b), and Streeter (1990). Yet Mosco's work is appealing because it situates the study of policy-making within a holistic analysis of state-society relations. As a result, his framework, unlike most other relevant works, avoids compartmentalizing particular dimensions of the policy-making process.

Writing in the late 1980s, Mosco's goal was to develop a conceptual framework that would illuminate the political determinants of telecommunications policy. He identified three dominant ways of thinking about the role of the state in developed capitalist societies – the pluralist, class power, and managerial perspectives – and produced from each, an extrapolation about the forces that shaped recent developments in telecommunication policy, particularly deregulation. Mosco's analysis demonstrates well the value of theoretical pluralism; it shows how each extrapolation illuminates different aspects of the policy formation process. At the same time, his analysis suggests the class-power extrapolation provides the most comprehensive and indispensable understanding of the politics of telecommunications deregulation.

Following Mosco, we draw out the logic of the pluralist, class power, and managerial perspectives and then apply each to the Clipper Chip initiative. First, each perspective is summarized in terms of how it depicts the formation and failure of policy initiatives. Second, an extrapolation is made from each as to the key forces that may have shaped the Clipper Chip initiative. Third, each extrapolation is then compared with real-world developments in order to examine how well each illuminates the policy process, and to determine which extrapolation provides the better explanation.

The three perspectives on the state make the following claims about the policy process:[4]

- The pluralist account contends that social and economic change, usually sparked by technological breakthroughs, results in the mobilization of individuals who often collectivize to form interest groups. Interests are chiefly economic or cultural in origin. Interest groups make demands on the political system. The U.S. political system or state is viewed as a highly differentiated mosaic of agencies that are accessible to influence by interest groups. For some pluralists, state actors (e.g., elected officials and bureaucrats) are neutral arbiters who mediate the conflict between interest groups. For others, state actors may advance their self-interests in the process of responding to demands from outside the political system. Interest groups compete, bargain, form coalitions, and mutually adjust. The relative power of groups and coalitions will decide which ones get their way or have the most influence. Power is perceived as being equal to the resources groups possess. These resources include wealth, information, persuasiveness, and skill. A policy initiative will fail if the interests who oppose the initiative are more successful in mobilizing their resources.

- The class power account contends that the state functions to assist the process of capital accumulation by building roads, and providing housing and welfare, for example. To this end, the state also maintains social control via the law enforcement and national security establishment. The interests of the economic elite (e.g., owners of corporations, directors of major corporations, corporate lawyers) dominate policy processes. This occurs in at least two ways. On one level, the economic elite exercises power via personal contacts with state actors and through the pressure of associations representing business and industry. At another level, the economic elite benefit from the fact that state officials' freedom of action is limited by the latter's need to assist the process of capital accumulation. This constraint stems from state actors' dependence on a successful economy for their continued survival in office. When conflict exists between different fractions of the economic elite, the state may act against the interests of a particular fraction if this is perceived to be in the interest of capital accumulation in general. Policy initiatives fail when the economic elite, or dominant fractions of the elite, become dissatisfied with the direction policy has taken; the economic elite uses its influence to destroy the policy initiative. Various state actors may also seek to undermine the policy because they believe it poses a threat to the capital accumulation process.

- The managerial perspective emphasizes the strategic activities of state managers in creating and shaping policy initiatives. Thus high-ranking members of the executive branch and appointed and elected politicians are said to often formulate and implement policies to further the interests of the state. These interests may include keeping order, reinforcing the authority of state agencies, and strengthening the capacity and scope of state agencies. Given the myriad administrative units that constitute the state, competition among state managers is inevitable. In pursing their goals, state managers will draw on a variety of resources including expertise, funding, and their structural location within the state. A failed policy initiative may be explained by such factors as a lack of state managers' expertise or experience in the area, a lack of funding, or a structural problem of competition among state agencies, for example.

From these general perspectives on the state, the following extrapolations are made about the Clipper Chip initiative:

- From the pluralist perspective the main features of the initiative can be explained by focusing on the interests, interactions, and strategies of those groups who, in response to technological changes, mobilized for and against the initiative. Those for the initiative include law enforcement and national security agencies, and the White House. Those against include industry actors (e.g., software vendors, computer hardware manufacturers), civil liberty groups, and privacy advocates. The initiative failed because those who opposed the initiative were more successful in mobilizing their resources. Given pluralism's claim that policy is motivated and driven by primarily societal interests (economic and cultural), we should expect these interests to be key in explaining the rise and fall of the Clipper Chip. Political actors (e.g., bureaucrats, members of congress) may have played a secondary role; they may have attempted to expand their own budgets and prerogatives while responding to these outside interests.

- The class power account suggests the Clipper Chip can be interpreted as a state strategy that was devised to preserve and enhance an increasingly important tool of social control in the "Information Age" – the ability to intercept and monitor electronic communications. Fractions of the economic elite who are not served by the initiative (e.g., software vendors, computer-hardware manufacturers) exert pressure on the state to thwart the initiative. The initiative fails because these economic actors are successful in persuading state actors that the initiative does not serve the interests of capital in general. This being the case, we should expect to see that various bureaucrats and members of congress worked to defeat Clipper Chip on the grounds that it would have adversely influenced the capital accumulation process. Like the pluralist extrapolation, factors that originate outside the political system (e.g., the needs of capital accumulation, the profit-seeking interests of economic actors) should be key to explaining the Clipper Chip initiative.

- From the managerial perspective, the main features of the initiative can be explained by focusing on the strategic activities of state managers (e.g., NSA, FBI, White House, congress). These managers are impelled by their respective perceptions of state interests and the role of the state. They may attempt to form coalitions with like-minded state actors to achieve their policy goals. The initiative probably failed because those state actors in favor of the initiative (e.g., NSA, FBI, White House) lacked the capacity and resources to succeed. Competition between state actors may also have contributed to the demise of the initiative. In this extrapolation, the focus is on interests, resources, and processes that are largely endogenous to the political system.

How does each extrapolation illuminate the forces that shaped the Clipper Chip initiative? Which provides the more adequate explanation of the initiative? We address these questions by way of a two-step approach. First, we conduct a case study of the initiative. The relative merits of the extrapolations are then assessed in light of the case study findings.

3. Case study

The extrapolations help guide the case study. That is, each extrapolation suggests factors the case study should focus on (e.g., the resources used by interest groups, the influence of powerful economic actors, the strategies of state actors). However, the case study approach also warrants an inductive moment in which the case "tells its own story" (Stake, 1984, p. 241). Our values are inevitably implicated in this task as it is we who decide "the case's own story." Yet, however value laden this inductive moment, it permits us to potentially reveal forces and factors that may have been neglected by all three extrapolations.

We begin by providing a brief overview of the history of U.S. encryption policy. An appreciation of this historical context is critical to understanding the dynamics of the Clipper Chip initiative.

Historical context

In the U.S., the development of encryption, which is the arts and science of disguising messages so only certain people can see the real message, was monopolized by the NSA for most of the last century. This highly secretive executive-branch agency was charged with a two-fold mission: to protect the U.S. State's classified (i.e., military and intelligence) communications from interception; and to intercept and decode all foreign communications deemed of interest to the security of the U.S. (Bamford, 1982).

In the 1970s and 1980s, NSA's stranglehold on encryption was challenged. The rapid deployment of computer technology and the integration of computers and networks fuelled unprecedented private sector interest in encryption and communications security. NSA's primary concern at the time was to prevent the spread of strong private sector encryption abroad; this would impede its ability to monitor foreign entities, it was argued. Two major mechanisms were used to do this: export controls and standards setting (OTA, 1994, p. 116).

Export control policy categorized encryption-enabled software and hardware products as "munitions-related". As such, anyone wishing to export these products was required under the Arms Export Control Act to obtain a license. NSA had the final word in the license review process. The agency denied licenses to products that would, in its view, pose a challenge to its international surveillance mission. Industry actors heavily criticized this policy for stifling innovation in an area that was increasingly important to the U.S. computer industry. They also contended that the policy was forcing U.S. companies to lose markets to foreign competitors (GAO, 1993; Kuttner, 1989).

With respect to standards setting, a struggle developed over who should control encryption standards for the emerging government and commercial computerized information systems that did not carry classified, national-security related information. Congress concluded that NSA control would stifle private sector research and development on encryption and, as a result, damage the computer industry and the economy. With the Computer Security Act of 1987 (CSA), congress gave the responsibility to another executive-branch agency, the National Institute of Standards and Technology (NIST), which is housed in the Department of Commerce. The Act emphasized that in the area of unclassified computer systems, public accountability and open decision-making was the goal. However, NSA moved quickly to undermine CSA with the support of NIST. In 1989, the directors of both agencies signed a Memorandum of Understanding that delegated to NSA many of the responsibilities congress had assigned to NIST. NSA was back in the driver's seat (GAO 1993, p. 116; OTA, 1994, p. 14).

After the passage of CSA, NIST's first proposed standard was the digital signature standard (DSS) in 1991. DSS is a method of authenticating electronic transmissions, much as a written signature verifies the authenticity of a paper document. NSA not only selected DSS but also mandated its adoption.[5] Members of congress and computer and telecommunication industry representatives heavily criticized NSA's involvement; it had resulted in a flawed standard and weak security, they argued (Schneier and Banisar, 1997, p. 306). The suggestion was that NSA had chosen the standard because it would be relatively easy for the agency to decode DSS-enabled communications.

By the beginning of the 1990s, NSA still dominated the encryption policy process despite challenges from industry and congress. Specifically, the agency was positioned as the key player in the export control process. It also dominated the standards setting process for non-classified government and commercial information systems, as the DSS case exemplifies. In the following sections, it is evident that the legacy of the ongoing struggle between NSA and its executive-branch allies on the one hand, and congress and industry on the other, played an important role in shaping the Clipper Chip initiative. Civil liberty groups and privacy advocates would also join the fray.

Toward Clipper Chip

With the passing of the Soviet Union at the end of the 1980s, organized crime and terrorism emerged as key issues on the U.S. domestic and international security agendas (Farer, 1999). This was reflected in U.S. encryption policy. In the Cold War era, NSA's control of encryption was justified on the grounds that it protected the U.S. from external threats. With the passing of the Cold War, the emphasis on external threats continued but with new external surveillance targets -- rogue states, terrorism, and transnational crime were identified as the new threats. At the same time, NSA's control of encryption began to be framed as an important domestic law enforcement issue; if strong private sector encryption was available to drug traffickers and terrorists within the U.S., it was argued, this would be devastating for public safety.

The proximate roots of the Clipper Chip initiative can be located in the coincidence of law enforcement and national security interests at the beginning of the 1990s. At the time, law enforcement agencies led by the FBI were concerned that new developments in telecommunications (the digitization of networks and the proliferation of cellular phones, for example) were undermining its capacity to intercept electronic communications (GAO, 1993; OTA, 1995). At the same time, NSA was becoming increasingly concerned about the prospect of the widespread diffusion of difficult-to-break private sector encryption on telecommunications networks. In 1991, NSA warned the FBI that such an eventuality would seriously hamper the latter's ability to wiretap. Clint Brooks, then advisor to the NSA Director, recalls that it was initially a tough sell:

> *The FBI didn't understand the issue... [Encryption was] a somewhat peripheral issue to the FBI... What we were encountering was a lack of appreciation that digital communications was here. Wiretapping was just doing clips, or going to the phone office. But the phone companies had all gone digital. The next step [in understanding] was that encryption was going to exist on digital lines (quoted in Diffie and Landau, 1998, p. 75).*

Even if the FBI succeeded in preserving its wiretap capabilities, Brook's argued, this would be of little use if the intercepted communications were encrypted.

The FBI responded to the perceived threats posed by digital telephony and private sector encryption by asking Senator Joseph Biden, Chair of the Senate Judiciary Committee, to attach a "Sense of Congress" provision to The Comprehensive Counter-Terrorism Act of 1991. Biden (1991) noted:

> *This [bill] expresses the sense of the Congress that providers of telephone and other electronic communications equipment should design and engineer such equipment in a manner that allows*

> *law enforcement agencies to obtain the plain [i.e. decrypted] text of voice, data, and other communications when appropriately authorized to do so.*

The provision was withdrawn in June 1991 after industry actors and civil liberty groups heavily criticized it as a threat to the security of telecommunications networks and to the privacy of electronic communications (GAO, 1993). NSA, the Department of Justice, and the Central Intelligence Agency quickly determined that the encryption issue was primarily responsible for this opposition. They agreed that the issue should be de-coupled from the digital telephony problem (Schneier and Banisar, 1997, p. 309). Brent Scowcroft (1992), President Bush's National Security Advisor, summarized the new strategy as follows:

> *On December 30, 1991, I sent to the President a memorandum seeking approval for a legislative strategy for digital telephony.... On January 15, 1992, he approved the following course of action: Justice should go ahead now to seek a legislative fix to the digital telephony problem, and all parties should prepare to follow through on the encryption problem in about a year. Success with digital telephony will lock in one major objective; we will have a beachhead we can exploit for the encryption fix; and the encryption access options can be developed more thoroughly in the meantime.*

For two years, the FBI lobbied intensively for a legislative fix to the digital telephony problem. Congress responded by enacting the Communications Assistance for Law Enforcement Act of 1994. CALEA, for the first time, requires telecommunications carriers to re-engineer their telecommunications networks and services so that law enforcement can continue to wiretap. Scowcroft's "beachhead" was secured.

Clipper I

As the FBI pushed its digital telephony legislation, a non-legislative fix unfolded for the encryption problem. The initiative was sparked by AT&T's decision in 1992 to produce an encryption-enabled telephone that could be used to obstruct authorized wiretaps. Alarmed by this development, Attorney General Barr requested and received NSA assistance. On behalf of the Department of Justice and the FBI, Barr sent a memo to AT&T suggesting that a classified NSA-developed encryption method be built into their new phone:

> *NSA has advised the Department [of Justice] of the existence of an algorithm, known as Skipjack that is approved by NSA for encryption of certain types of unclassified, sensitive information within the Department of Defense... I further understand that there is a commercially manufactured, publicly available microchip that incorporates this algorithm (quoted in Schneier and Banisar, 1997, p. 310).*

The microchip or "Clipper Chip" permitted the implementation of key-escrow encryption; users would be provided secure communications while law enforcement officials would be guaranteed access to a set of "spare keys" in order to access communications when authorized to do so. AT&T agreed to use the Clipper Chip in exchange for guaranteed government purchases of the phone. AT&T's decision was also contingent on Clipper becoming a government approved standard, as this would increase the probability of a sizeable market for the phone (Schneier and Banisar, 1997, p. 310).

Shortly after the election of President Clinton in 1992, NSA, the FBI, and their executive-branch allies (National Security Council, Justice Department, Central Intelligence Agency, Department of Commerce) quickly convinced the new administration of the necessity of Clipper Chip. The White House (1993) formally announced the initiative on April 16, 1993:

> *[The Clipper Chip is a] new initiative that will bring the Federal Government together with industry in a voluntary program to improve security and privacy of telephone communications while meeting the legitimate needs of law enforcement... A "key-escrow" system will be established to ensure that the "Clipper Chip" is used to protect the privacy of law-abiding Americans. Each device containing the chip will have two unique "keys"... When the device is manufactured, the two keys will be deposited separately in two "key-escrow" databases that will be established by the Attorney General.*

A more sophisticated version of the Clipper Chip, called the Capstone Chip, was to be used for computer communications (NIST, 1993). Attorney General Reno designated the Departments of Commerce and Treasury as the escrow agents for Clipper (and Capstone) (DOJ, 1994). The White House emphasized that the Clipper Chip was a voluntary standard; the executive branch could not compel the private sector to use key-escrow encryption in the absence of legislation. Yet it did not hide its desire to make the Clipper Chip the *de facto* national standard (Harris, 1994). The government's purchasing power was to be key to the realization of this goal. If all government agencies adopted key escrow, the logic ran, they would be able to require all private sector contractors who interact with government to use key-escrow compliant devices. As these devices became more popular this would drive the potential competitors to Clipper Chip out of the market (NCR, 1996, p. 188).

With the announcement of the Clipper Chip initiative, export controls, which had been used to restrict the international availability of difficult-to-break U.S. encryption, was now joined by a control strategy aimed at preserving domestic law enforcement's practice of intercepting and monitoring electronic communications. The Clinton Administration explicitly connected the two control strategies when it determined that it would probably "permit the export of devices incorporating key escrow technology to most end users" at some point in the future (White House, 1994).

As required by law, the administration provided a period for public comment on Clipper Chip. Opposition to the initiative was overwhelming. Opponents ranged from civil liberty such as the Electronic Frontier Foundation (EFF) and Computer Professionals for Social Responsibility (CPSR), to technology companies like IBM, Lotus, Microsoft and MCI, to trade associations, computer specialists and academics. During the comment period, NIST received letters from over 300 organizations and individuals. Only a handful were supportive of the plan (NIST, 1994).

Opponents objected on several grounds. First, much concern was raised about the standards setting process. As in the DSS case, NSA had once again managed to dominate the process for non-classified government and commercial information systems. It was argued that this undercut the letter and spirit of the Computer Security Act of 1987, which stressed public accountability and open decision-making (Rotenberg, 1993). The decision to keep the Clipper Chip algorithm classified led many to believe NSA had built a "trap door" in the key-escrow system. It was said that law enforcement would use this feature to circumvent the need to obtain a court order before decrypting encoded communications. Critics also argued that criminals could easily thwart the eavesdropping features of Clipper by opting for a non-escrow form of encryption that could be procured from a foreign supplier (via the Internet, for example) (Schneier and Banisar, 1997, p. 314).

Privacy concerns were also raised. Some argued that once the escrowed keys were revealed to law enforcement, the privacy of all communications encrypted with these keys would be compromised. Others argued that privacy would be compromised even if the escrowed keys were never accessed. Widespread knowledge of the fact that law enforcement had the technical ability to read all communications would create a perception that no communication is private, even if the vast majority of communications are never intercepted or read (Diffie and Landau, 1998, p. 212).

Producers of encryption, and the commercial users that wanted the best available encryption (e.g., software developers, computer manufacturers, the banking industry), argued that the initiative would simply compound the negative impact that export controls were already having on their global competitiveness. The following comments by the Computer and Business Equipment Manufacturers Association (CBEMA, 1993), which includes in its membership such corporations as Apple Computer, Compaq, Hewlett-Packard, IBM, NCR, and Sony, are representative:

> *Foreign customers will not choose an encryption product that allows access by US law enforcement agencies when other encryption products are readily available... In response to high customer demand and the inaccessibility of US products, many foreign companies have begun producing software and hardware that provide encryption capability. Because most other countries have less stringent export controls on encryption hardware and software, our government's cryptographic policies and regulations effectively have created an international embargo against US encryption products and fostered the development abroad of indigenous encryption production.*

In essence, CBEMA members doubted that a NSA-designed encryption product (with a possible "trap door") would be attractive to foreign buyers or to U.S. companies operating abroad. Their position, and the industry position in general, was that the Clipper Chip should be scrapped and export controls should be abolished (CIB, 1993; ICC, 1993).

Despite this strong opposition, the Clinton Administration chose to adopt the Clipper Chip as a government standard in February 1994 (NIST, 1994). Immediately, CPSR mobilized widespread public opposition via the Internet. It circulated an electronic petition that urged the withdrawal of Clipper Chip because "privacy protection will be diminished, innovation will be slowed, government accountability will be lessened, and the openness necessary to ensure the successful development of the nation's communications infrastructure will be threatened" (CPSR, 1994). The petition reportedly garnered around 50,000 signatures. By way of the Internet and through press releases, CPSR and EFF sought to convince the public that Clipper Chip placed individual privacy in imminent danger. These civil liberty groups also made ample use of the earlier mentioned industry critique of the Clipper plan (Rotenberg, 1993). Their campaign was very effective as across the nation, radios shows, newspapers, and popular Internet mailing lists called for the rejection of the Clipper Chip (Schneier and Banisar, 1997, p. 493).

Clipper II

Given this opposition, the Clinton Administration modified its position. After consulting with representatives of concerned groups, NIST announced a revised proposal in November 1995 which opponents quickly dubbed "Clipper II." To appease those who feared government abuse of key escrow, the new proposal called for the "spare keys" to be entrusted with a third party accessible to law enforcement. This third party would need to be government certified. In the new scheme, industry would be able to export encryption that used 64-bit keys, which would be more secure than the relatively weak 40-bit encryption that was permitted at the time. However, this could only occur if spare keys were made available to law enforcement agents under standard legal procedures.[6] Unlike Clipper I, which was based on a classified algorithm, the new policy would allow industry to develop and use any key-escrow encryption system as long it used a key no longer than 64 bits (NIST, 1995).

Clipper II was not well received. Industry actors and civil liberty groups were critical of the fact that the key-escrow concept appeared to be non-negotiable. Industry actors strongly opposed the linking of key escrow and export controls. Robert Holleyman (1995), President of the Business Software Alliance, an organization that promotes the interests of the American software industry, argued:

> *Perhaps government officials believe that they know more than American industry about what computer users worldwide are demanding by way of information security. If that is so, we strongly disagree... Clearly the government is trying to force America's software companies to include government-sought key-escrow features in its software as the price for export approval.*

By the end of 1995, the Department of Commerce (1996) had completed a survey on the foreign availability of encryption and the effects of export controls on U.S. industry. The report was released in January of 1996 but only after the Electronic Privacy Information Center (EPIC), a public interest group, filed a Freedom of Information Act lawsuit. The report detailed the rapidly growing worldwide demand for encryption technology. It noted that the market was expected to grow to $1.8 billion in 1996 from $695 million in 1991. It also pointed out that "[t][he growth of an international market for encryption software is being slowed by strong export controls, both in the United States and other major countries."

In response, members of congress introduced legislation seeking a more industry-friendly approach. Senator Patrick Leahy's Encrypted Communications Privacy Act (ECPA) proposed relaxing export controls (e.g., reducing NSA's role in reviewing the export of non-military products that contain encryption), and allowing domestic use of any kind of encryption, escrow or non-escrow. Senator Conrad Burns introduced the Promotion of Commerce Online in the Digital Era Act (PRO-CODE) which would have prohibited mandatory key escrow and liberalized export regulations, and permitted the sale and use of any encryption domestically. Similar legislation, the Security and Freedom Through Encryption Act (SAFE) was introduced in the House by Representative by Bob Goodlatte. These three similar bills had significant support in congress, but they were not subject to a vote because of the threat of presidential veto (Walker, 1999).

Clipper III

As industry and congressional pressure intensified, the Clinton Administration modified its position a second time. In May 1996, the White House's Interagency Working Group on Cryptography Policy, which includes NSA representatives, recommended that industry take the lead in developing and implementing a "global key management infrastructure" which would permit government to recover "spare keys" when necessary (WGCP, 1996). Under the new proposal, companies would receive immediate approval to export encryption products using 56-bit encryption provided they presented a plan to install key recovery in their exported encryption products within two years. Further, encryption products of any strength would be eligible for export approval, once the management infrastructure was in place. The administration would set policies for handling escrow keys and establish arrangements with other countries to implement the policy. The recommendations were accepted by the White House (1996).

Again industry actors, civil liberty groups, and members of congress raised objections. The following comments by Senator Leahy (1996), sponsor of ECPA, exemplify some of the concerns:

> *The weakest link in a key recovery system may be the country with the weakest privacy protections. Internet users...do not want the privacy of their encrypted messages to be at the mercy of a country that ignores the Fourth Amendment principles... Only those companies that agree to turn over their business plans to the government and show that they are developing key recovery systems, will be rewarded with permission to sell abroad products with ...encryption... Conditioning foreign sales of [encryption] on the development of key recovery systems puts enormous pressure on our computer industry to move forward with key recovery, whether their customers want it or not.*

The administration's initiative was quite effective in dividing the opposition to Clipper. As Leahy predicted, and much to the consternation of civil liberty groups and other industry actors, many companies who opposed the revised initiative were nevertheless eager to obtain approval for their 56-bit encryption products. In October 1996, 11 companies including Apple, Attala, Hewlett-Packard, IBM, NCR and Sun became charter members of Key Recovery Alliance (KRA, 1996). The number would grow to over 30 within the year. The aim of the Alliance was to develop key-recovery techniques to meet the needs of customers and to work for the relaxation of export restrictions. In an attempt to turn the key-escrow feature to their advantage, the Alliance argued that there were valid commercial reasons for key recovery (such as people gaining access to their data if they lost their keys).

As noted above, the Administration's vision of a global key management infrastructure required significant international cooperation to develop a framework for inter-government access to keys and encrypted information. In early 1996, a delegation led by the Department of Justice, the FBI, and NSA lobbied the Organization for Economic Cooperation and Development (OECD) to adopt a mandatory key recovery policy. Describing the delegation's tactics a press report states:

> *The US [were] willing to "use" the OECD as a "policy laundering" machine: to pressure the organization in order to have the key escrow policy approved by the 24 countries. US intelligence officials would have been using it as a political weapon at home, where Congress, public-interest groups and industry pressure groups are on the verge to act against any key-escrow policy.*[7]

The effort failed. At an OECD meeting in June 1996, the issue of the "possibilities of key escrow initiatives by national governments" was discussed. France and the U.K. were the only supporters of key escrow. The Dutch, Japanese and Scandinavian delegations opposed the initiative. Given that German companies, taking advantage of the restrictions on their U.S. competitors, were selling strong encryption around the world, the German government showed little interest in supporting the U.S. position (Diffie and Landau, 1998, p. 221). In March 1997, the OECD issued its encryption guidelines. Rather than embrace mandatory key escrow, the guidelines focused on user choice. It also urged that "the development and provision of cryptographic methods should be determined by the market in an open and competitive environment and that the development of international standards…for cryptographic methods should also be market driven" (OECD, 1997).

In October 1997, the European Commission issued a report, *Toward a European Framework for Digital Signatures and Encryption*, which further undercut the Clinton Administration's efforts. In the report, the commission rejected the global key-escrow initiative on the grounds that it would undercut privacy and stifle electronic commerce. "Any regulation hindering the use of encryption products" the report said, "hinders the secure and free flow of personal information…If citizens and companies have to fear that their communication and transactions are monitored with the help of key access….they may prefer remaining in the anonymous off-line world" (European Commission, 1997). The commission was also concerned about participating in a global encryption framework that would allow U.S. companies to dominate the next generation of security products. The German government, in particular, expressed concern that U.S. authorities would have improper access to data on German users – possibly violating Germany's laws on data protection (Andrews, 1997).

Demise of Clipper and Beyond

Back on the domestic front, the SAFE, PRO-CODE and ECPA legislative proposals alluded to earlier were reintroduced in 1997. As Regan (2001) notes, the congressional hearings on these bills were dominated by concerns about industry competitiveness. However, law enforcement remained defiant. FBI Director, Louis Freeh, voiced strong opposition to SAFE and other bills on the grounds that encryption without key escrow would seriously undercut their ability of law enforcement to fight crime and prevent terrorism (Freeh, 1997). Freeh's allies in congress, particularly those on intelligence and national security committees, helped block the passage of SAFE and the other initiatives.

By early 1998, the Clinton Administration appeared to conclude that the opposition to key escrow was too great. Indeed, Commerce Secretary Daley acknowledged that the administration's initiative had failed (Regan, 2001). The policy shift that industry and civil liberty groups had advocated for was realized on September 16, 1999 when the White House announced the elimination of export controls on encryption after a one-time review. By this time there was sufficient support in congress for legislation that would have achieved the same result. Congress was scheduled to vote late in September 1999 on the SAFE bill but agreed to stop consideration until the administration drafted final regulation (Regan, 2001). On January 14, 2000 the Department of Commerce released revised export regulations, conceding to many industry demands.

While the U.S. law enforcement and national security establishment lost the battle over key-escrow encryption, it clearly has not given up the struggle to gain access to encrypted electronic messages, at least at the national level. In a recent federal gambling case it was revealed that the FBI has developed a new surveillance tool – a so-called key-logging device that is installed in the suspect's computer. The tool permits the agency to capture every key stroke and thereby the key to encrypted files (Schwartz, 2001). A federal judge recently upheld the use of this technology, alluding to the perceived need to bolster law enforcement surveillance capabilities in the aftermath of the recent attacks on the World Trade Center and the Pentagon (Kraus, 2001).

4. Theory revisited

As Colin Sparks (1998, p. 29) eloquently puts it,

> *...boundaries in actual social life are inevitably messy and blurred. Actual social formations always display a greater richness and complexity than the theoretical abstractions we use to*

> *understand them, [however]...[we] are forced to use those abstractions because we cannot hope to understand reality simply by observing its surface features.*

The case study herein amply demonstrates the "messy and blurred" nature of the policy formation process surrounding the Clipper Chip. In this section, we return to our earlier theoretical extrapolations with the intent of critically assessing which provides the most useful abstractions in light of the case study findings.

The pluralist account

From the pluralist perspective, the Clipper Chip initiative's most important features resulted from a process in which various economically and culturally motivated interests mobilized to obtain their preferred outcomes. It is certainly the case that these interests played an important role in shaping the career of the initiative. As the case study illustrates, industry actors and civil liberty groups mobilized to oppose Clipper I. Facing intransigence from the Clinton Administration, these groups worked to broaden the scope of conflict. In this phase of the initiative, the role of civil liberty groups such as CPSR was particularly important; they used the Internet and traditional media to mobilize widespread public opposition to Clipper. In doing so, these groups succeeded in framing key escrow as a serious threat to the privacy of ordinary Americans. Along with industry criticism, this growing public opposition forced the administration to modify its key-escrow plan.

The pluralist extrapolation also sensitizes the analyst to the role congress played in mediating and responding to the demands of interest groups. Soon after the announcement of Clipper II, congress became a key site of opposition. EPIC's Freedom of Information Act lawsuit, which led to the public release of the Department of Commerce's study of the worldwide demand for encryption, appeared to be a catalyst for this; the findings of the report significantly bolstered industry's case against Clipper. Responding to industry concerns in particular, a number of prominent members of congress (Conrad, Goodlatte, Leahy) proposed bills that sought to relax export controls and scuttle the emergence of key-escrow as the *de facto* national encryption standard. Congress again played an important role in articulating industry concerns about Clipper III and in supporting the industry-friendly SAFE bill, which was reintroduced in 1997. This was an important factor in the administration's decision to substantially relax export controls in 1999.

Yet, the pluralist extrapolation has significant limitations. It provides no explanation of the roots of the Clipper initiative or of the processes surrounding the formulation of Clipper I. Clearly, economically and culturally motivated interests did not push for the initiative. Rather, law enforcement and national security agencies, in coalition with other executive-branch actors, were responsible for the rise of Clipper. The pluralist extrapolation fails to account for why these actors continued to struggle doggedly to implement the key-escrow concept in the face of intense opposition from industry and civil liberty groups. Clipper III provides an example of this resoluteness. While this revised initiative offered some concessions to industry, it was also a bold attempt by the administration to "divide and conquer" the opposition and, at the same time, outflank congress by attempting to persuade other governments and the OECD to adopt a global key-escrow scheme.

In short, the pluralist account provides little insight into the strategies and motives of some of the key actors who shaped the Clipper Chip initiative. The extrapolation also fails to draw attention to the importance of inter-state relations in explaining the demise of the initiative; opposition from foreign governments, the OECD, and the European Union was a crucial factor in the withdrawal of the Clipper Chip proposal.

The class power account

The class power extrapolation suggests that two factors were key in shaping the main features of the Clipper Chip initiative – the influence of the economic elite and the structural constraints imposed on state actors by the requirements of capital accumulation. With respect to the first factor, the class power account does not differ that much from the pluralist approach; the class power account focuses on the role of the economic elite as opposed to interest groups. As noted above, it is clear that powerful industry actors exerted intense pressure on the Clinton Administration, directly and through congress. Moreover, the extrapolation's focus on the economic elite draws the analyst's attention to the fact that the industry critique did become the central opposition discourse as the Clipper initiative unfolded. Put differently, it can be conjectured that the administration would have been much less inclined to make concessions if only civil liberty groups constituted the opposition.

Yet, as with the pluralist account, the class power extrapolation does not explain why the Clipper Chip initiative emerged, or why various state actors in the executive branch pursued the policy against the wishes of the economic elite. This poses a real problem for the extrapolation particularly given the fact there was no competition or struggle among different fractions of the economic elite. That is, state actors were not in the position of having to balance the claims of different fractions of the economic elite; the position of the economic elite was unambiguous – outright opposition to Clipper Chip and export controls. Furthermore, the struggle over the initiative was devoid of a class-struggle dimension; no working class movements mobilized to oppose the economic elite. Given these factors, why wasn't initiative immediately scrapped?

This question is not satisfactorily addressed by the extrapolation's second explanatory factor -- the structural constraints imposed on state actors by the requirements of capital accumulation. This factor suggests that law enforcement and national security agencies, along with their allies in the executive branch, initiated the Clipper Chip plan because they perceived it as necessary for the smooth functioning of the capitalist system. But why would these state actors come to this conclusion while many in congress did not? As the case study illustrates, members of congress opposed the initiative on the ground that it would negatively impact the capital accumulation process. Why did the executive-branch actors see the problem in a different way? Furthermore, if the initiative emerged to serve the needs of capital in general, surely we should have seen evidence of other fractions of the economic elite – those not in the high-tech sector – weigh-in on the side of the executive branch? Indeed, perhaps we would have expected to see these fractions pressure other governments and the OECD to adopt a global key-escrow system. There is no evidence that this occurred; rather the widespread view, both at the national and international levels, was that the Clipper Chip posed a threat to the capital accumulation process.

The Managerial Account

The managerial extrapolation suggests that the interests of the state and the strategies and capacities of state actors were decisive in shaping the Clipper Chip initiative. The very aspects of the Clipper Chip initiative that pluralism and class-conflict accounts do not explain appear to be explicable by the managerial extrapolation.

It appears that "reasons of state" are key to explaining the origins and formulation of Clipper I. Against the backdrop of a changing geopolitical context and shift in national security priorities (from Cold War concerns to transnational and domestic crime), the development of markets for strong private sector encryption generated control problems for the law enforcement and national security establishment. It seems clear that the Clipper Chip initiative was launched in order to maintain the state's long-standing interest in and capacity to monitor electronic communications. NSA's ability to draw on a number of resources was key to the formulation of Clipper I: its long-standing expertise in the area of encryption; its pivotal position in the encryption standards setting process; and the existence of a tight-knit policy network within the executive branch (NSA, FBI, Department of Justice, ICA, White House, CIA, Department of Commerce). For example, NSA was able to draw on its Memorandum of Understanding with NIST to promote a classified algorithm as a federal government standard, in the process flouting congress' desire for an open decision-making process.

A focus on the interests and strategies of state actors also helps illuminate why a non-legislative "fix" was chosen for the encryption problem. Members of the executive-branch policy network shared the view that key-escrow encryption was in the interests of the state. Working to contain the scope and intensity of the debate over Clipper, members of this network decided to opt for a non-legislative strategy for Clipper Chip because they believed that a legislative approach would engender too much opposition. Furthermore, a legislative approach would have meant that control over the Clipper Chip initiative would have shifted from the executive branch to congress. The Clinton Administration was not going to let that happen; by pushing the Clipper Chip as a "voluntary" standard executive branch actors could exercise a good deal of control over modifications to the initiative as these became necessary.

In a similar vein, the managerial extrapolation also helps illuminate important dimensions of Clipper II and Clipper III. During these phases of the initiative, the administration did make concession to industry, civil liberty groups, and members of congress, but it refused to back away from the key-escrow concept. This can be explained in terms of the distinct and irreducible nature of the state's interest in maintaining its electronic surveillance capabilities. It is this interest that appears to have impelled the executive branch to attempt to "divide and conquer" the opposition as well as to persuade foreign governments and the OECD to adopt a global key-escrow scheme. The managerial perspective suggests a simply and persuasive explanation of the latter strategy; motivated to protect its capacity for conducting surveillance, the U.S law enforcement and national security establishment mobilized to address a problem that was global in scope by seeking a global fix.

The managerial extrapolation suggests that the Clipper Chip initiative may have failed due to competition between state actors. As alluded to above, conflict between the executive branch and congress did play an important role in the demise of Clipper. This conflict was institutionalized with the enactment of the Computer Security Act of 1987. At that time, congress clearly defined the role of state as facilitating the development of the high-tech industry and helping to secure foreign markets for U.S. companies. By contrast, executive-branch actors were primarily concerned with national security issues. As the case study illustrates, the same clash of interests and objectives was a telling factor in the failure of the Clipper Chip proposal. For example, the White House was aware that if it had not withdrawn the Clipper Chip and relaxed export controls in 1999, congress would have done so with the passage of the SAFE bill.

None of the extrapolations explicitly draw attention to the importance of inter-state relations in explaining the withdrawal of the Clipper Chip initiative. However, it does seem that the managerial extrapolation's emphasis on competition between state actors as factor in the decline of the Clipper Chip can be extended to the international level. As the case study suggests, many other states as well as supra-state bodies (OECD and the European Union) opposed the Clinton Administration's plan for a global key-escrow scheme. Indeed, this may well have been the decisive factor in explaining the defeat of Clipper. If the administration had found widespread support among these state actors, it may well have been able to persuade congress to go along with Clipper III. After all, by that time the administration had managed to "buy-off" an important segment of the industry opposition. However, the fact is that there was little international support for Clipper. A comparative analysis of state policy processes would need to be conducted in order to explain why some states supported the Clipper while the majority did not.

5. Conclusion

Expecting one theory to explain the complexities of the rise and fall of the Clipper Chip initiative is a demanding requirement. We feel that the managerial perspective has most to offer in this regard. It correctly points to the important role played by state actors in initiating and formulating Clipper I, II and

III. It also captures the importance of competition between state actors as an important explanatory factor in the demise of Clipper. However, the managerial perspective does underplay the importance of secondary factors such as the role of industry and interest group opposition in shaping the initiative -- the pluralist and class power perspectives were helpful in illuminating these factors. We see this as underlining Mosco's (1988) claim that theoretical pluralism is critical to understanding the different aspects and dimensions of the policy formation process.

After analyzing the politics of telecommunications deregulation, Mosco suggested that that the class-power extrapolation provides the most comprehensive and indispensable understanding of the telecommunications policy process. After analyzing the Clipper Chip initiative, we come to the same conclusion about the managerial perspective. It may be that these contrasting conclusions can be explained by the differences in our respective objects of study. Mosco was concerned with the forces that shape policies associated with the economic and social functions of telecommunications (e.g., competition policy, universal service) while we focused on the formation of a policy initiative associated with the policing/surveillance function of telecommunications network. If this is the case, it suggests that there may be important limits on pluralist and class power perspectives when applied to telecommunications policy. This may seem a banal point but it is important to stress that both pluralist and class power theories are promoted as general theories of the policy process; they do not contain accounts of their own limitations. Of course, the same may apply to managerial theory; it may be of less utility when applied to policies associated with the economic and social functions of telecommunications. Clearly, more research is required -- especially of a comparative nature -- before we can move beyond these tentative comments.

The dominant discourse on globalization announces the state's retreat in the face of global markets and technological forms. Our case study suggests that this retreat is selective. In the realm of national security and law enforcement policy, U.S. state actors are not idly standing by as these global economic and technological forces undercut their electronic surveillance capabilities. As the managerial extrapolation suggests, "reasons of state" are propelling these state actors to attempt to insert their surveillance interests into globalization processes. Whether they actually succeed in this is another matter. The case study indicates that without strong support from other states and supra-state bodies, future transnational surveillance initiatives are unlikely to succeed. However, it is not difficult to anticipate possible events that could trigger this support. Another event like the attacks on the World Trade Center and the Pentagon could serve as the catalyst, particularly if the surveillance initiatives in question do not conflict with the interests of powerful economic actors.

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[1] One form of state-controlled transnational telecommunications surveillance capacity, the Echelon system, already exists. Echelon is a global network of computers that automatically searches through millions of intercepted messages for pre-programmed keywords in electronic communications. NSA and its counterparts in the U.K., Canada, Australia and New Zealand developed the system shortly after WWII (Bamford, 1982; European Parliament, 2001). Strong private sector encryption poses a substantial threat to the system.

[2] An ongoing attempt is the effort to internationalize the Communications Assistance for Law Enforcement Act of 1994. CALEA, for the first time, mandates that U.S. telecommunications carriers must engineer their networks and services in such a way that law enforcement can continue to wiretap in the face of rapidly changing technologies. The FBI has held regular meetings with its counterpart agencies in the European Union (EU) with the goal of incorporating CALEA in European law. Their collective efforts resulted in an EU Council of Ministers resolution, adopted in January 1995, that mirrors CALEA in some important respects. Shortly after, the EU Council agreed on a Memorandum of Understanding which extended the January agreement to non-EU countries that chose to sign. And in response to pressure from signatories, the International Telecommunications Union adopted a resolution in 1997 that called for priority to be given to the harmonization of technical requirements to make law enforcement interception possible across the globe. For an overview see Statewatch "European Union and the FBI Launch Global Surveillance System," www.statewatch.org/News4A.HTM.

[3] In addition to Clipper Chip, and CALEA (see footnote 2), U.S. law enforcement has recently launched the Carnivore initiative. This surveillance system is installed at the suspect's internet service provider to scan all-incoming and outgoing emails. While the system can perform fine-tuned court-approved targeted searches, it is also capable of broad sweeps, potentially enabling the agency to keep tabs on all network communications. In the wake of the recent attacks on the World Trade Center and the Pentagon, the USA-Patriot Act of 2001 was passed which substantially enhances the wiretapping powers of law enforcement. In the mid-1990s, the French government implemented a Clipper Chip plan of their own but this was reversed in 1999. In the United Kingdom, the Regulation of Investigatory Powers Act 2000 (RIPA) contains significant provisions with respect to law enforcement investigations involving the use of encryption. RIPA also appears to give U.K. law enforcement Carnivore-like powers to intercept Internet communications.

[4] Following Mosco, we rely on Alford and Friedland's (1985) authoritative discussion of state theory.

[5] A Freedom of Information Act lawsuit filed by the Computer Professionals for Social Responsibility (CPSR) makes this very apparent. See CPSR v. NIST, Civil Action No. 92-0972 (D.D.C.).

[6] The key length of encryption is an indicator of its strength; the longer the key, the stronger the encryption.

[7] Bulletin Lambda 2.08 July, 19, 1996. Available at: http://www.freenix.fr/netizen/209-e.html#1.

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Yoshiko Nozato
6516 Linchmere Lane
Dublin, OH 43017
(614)764-7436
yn256401@ohio.edu

Credibility of Online Newspapers

Yoshiko Nozato

Communication & Development Studies

Center for International Studies

Ohio University

Communication Technology & Policy Division

AEJMC 2002 Miami Beach Convention

Abstract

This research examined the credibility of online newspapers. There were strong relationships between credibility and respondents' experiences with the Internet, online newspapers, and familiarity with printed newspapers. Timeliness, depth, reputation, and accuracy of online newspapers appeared to be important to respondents. The findings suggest that respondents perceived the content of online newspapers to be the same as printed newspapers. Online newspapers' credibility was evaluated as being high.

Credibility of Online Newspapers

Introduction

Internet technology has made communication much easier and less expensive. It has attracted many people and has penetrated into people's daily lives. The mass media also have accepted the Internet. Almost all forms of traditional media, such as radio, television, and newspapers have extended their work into this new field. The first online newspaper to present its content electronically was the *Chicago Tribune* in 1992 (Deuze, 1999). Since 1992, online media have dramatically evolved. The Internet and the World Wide Web have both significantly influenced modern journalism. Many television, radio broadcasting stations, and newspapers operate their sites using Internet technology.

Online media distinguish themselves from traditional media. Online media allows readers to enjoy browsing their content and offer not only texts but also digital images. Online media can present the most recent information and links to related news articles from local to international topics. The interactive features of the Internet seemingly imply that online media have more advantages than traditional media forms. People's expectations for new types of journalism are driving them online. Some have begun seeing the Internet as an alternative to traditional media.

It is still uncertain if online media meet people's expectations, however many people do rely on it for news. Research has found that online audiences go to news web sites "to get information that is unavailable elsewhere, for convenience, and the ability to search for news on a particular topic" (Pew Research Center [PRC], 1998). People must place some reliance on online journalism if they are using it. Online audiences are surely increasing despite of the fact that there is a serious concern about misinformation on the Internet. An evaluation of Internet sites that presented health information showed a drop in reliability between 1996 and 1997 (Spang & Baker, 2000). If reliability is an issue, what are the reasons for increased dependency on online media? How do readers evaluate the content of online media? This research was conducted to examine the credibility of online media by focusing on online newspapers. It will provide a better understanding of why people read online media and how people perceive the information. Finally, it will help develop and improve future journalism on the World Wide Web.

Literature Review

Usage of the Internet

The Internet allows people to do a variety of things. People use email or chat to keep in touch with people who are far away and with people whom they meet everyday. Some people use games on the Web to have fun or to kill time. Others look for information through search engines. People also go to online media to get weather reports, entertainment news, local or international news, business information, and political news.

There are two dimensions of usage of the Internet. The Internet can be used as mediated interpersonal technologies, which are for social bonding, relationship maintenance, problem solving, and persuasion. The Internet can also be used as mass communication, which is for informational and leisure purposes (Flanagin & Metzger, 2001). One study suggests that Internet users are classified along with these two categories, interpersonal utility and information seeking (Papacharissi & Rubin, 2000).

Motivations of using the Internet for the former are isolation, dislocation, long-distance social network, lack of satisfaction of current situation, and sense of belonging (Bakardjieva & Smith, 2001). Those for the latter are surveillance, economic security, and self-education (Mings, 1997; Papacharissi & Rubin, 2000; Flanagin & Metzger, 2001).

People go to the Internet increasingly as a source of information. Nearly half of all Internet users go to the Internet at least once every week to get information (Pew Research Center [PRC], 1999). Information seeking is widely accepted as a usage of the Internet in the previous studies (Mings, 1997; Stempel, Hargrove, & Bernt, 2000; Ferguson & Perse; Papacharissi & Rubin, 2000; Flanagin & Metzger, 2001). To acquire information is a principal reason why people go online.

Online media attract the audience for several reasons: interactivity, personalization of news, and convergence (Deuze, 1999). For example, interactivity means that people instantly send feedback to the writer by email. It could possibly lead to a dynamic shift in power control of mass media. The dominant paradigm in traditional communication, one sender to many receivers, can be changed on the Internet to many senders to many receivers (Li, 1998). An audience can possibly give further or detailed information by interacting with the newsroom. This is able to happen since journalists increasingly rely on online information for newsgathering (Garrison, 2001). Online media users commonly prefer the personalization of news. It allows people to customize news in terms of their interest. They can read only what they want to know when they have time. Convergence is one of the great features of the Internet, hyperlinks. Online media offers links to the related topics, history of an incident, background stories, and visual images.

The Pew Research Center (1999) found that Internet users are more interested in news than non-users. Furthermore, those who seek information for the printed newspapers also look for news online. Mings (1997) found that those who gain gratification from traditional newspapers also seek the same gratification from online newspapers. She also suggested that people are more likely to use online newspapers when they look for specific topics, such as business. The online audience perceives online newspapers as more useful for getting particular information than scanning a printed paper.

Misinformation on the Internet

The Internet's credibility is a major concern since information seeking is one of the main purpose of using the Internet. Online users have easy access to abundant sources but also run the risk of getting false information. Apparently, there is less control and gatekeeping on the web than for print publications. Neither authoritarian governments nor institutions screen can all the information on the Internet due to its nature. Nearly anyone could publish on the Internet. It needs to be considered that thousands of individuals have the opportunity to publish in even highly prestige newspapers' sites, such as the *Wall Street Journal* and the *New York Times* online (Gilster, 1997, p. 89). However, less critical and uninformed people are more likely to accept an untruth as a truth (Hernon, 1995). Falsity on the web is seldom revealed because there is too much information. The more information is put on the Internet, the chance of discovering misinformation decreases. In addition to that, most people neither have time to verify its accuracy nor go back to the same site because the browser may fail to find it again (Calvert, 2001). Individual education is the most plausible way to avoid getting inaccurate information. Studies suggest the necessity of new criteria for the online media literacy (Floridi, 1996; Levi, 2000).

Credibility of the Internet

Despite the fact that the findings show the existence of misinformation on the web, other researchers found that the online media has believability as high as the traditional media in certain circumstances. Internet users judged online political information sources as more credible than traditional media counterparts (Johnson & Kaye, 1998). More experienced users trust more the content of the online media (Flanagin et al., 2000; Johnson et al., 2000; Schweiger, 2000). There are no significant findings that people rate the Internet less credible than television and radio. Newspapers are rated the most credible (Flanagin et al., 2000; Schweiger, 2000). According to the Pew Research Center (1998), " Internet audiences find the websites of various news organizations no more or less accurate then the information found in those organizations' traditional news outlets."

These findings indicate that people regard the Internet as being credible even though they should think of it as less credible. Flanagin and Metzger (2000) gave an explanation for this gap, "respondents may judge credibility on the basis of content rather than medium." Existent studies only compared credibility of the Internet to that of the traditional counterparts. Schweiger (2000) suggests, "Future studies on credibility should not only examine the credibility of the web as a whole, but also its single subsystems." Thus, this research attempts to investigate the credibility of online news media by examining online newspapers.

The gap is a considerable issue for the betterment of the online media. Why do people perceive online media as credible (specifically online newspapers) when there is still anxiety over the accuracy of the Internet? This is the main purpose of this research project.

Study Design

This study examines how college students evaluate credibility of the online newspapers. Therefore, the research question is:

RQ: How do students perceive the credibility of online newspapers?

Many studies that examine the credibility of the Internet found that an individual's experience with the Internet is mutually related to the perception of the Internet's credibility; more experienced people assess the Internet as being more credible (Flanagin et al., 2000; Johnson et al., 2000; Schweiger, 2000). In addition to that, online users are more interested in the news than non-users (PRC, 1998). Therefore, my hypothesis is that:

H1: Online newspaper credibility will be correlated with an individual's experience with the Internet.

Former researchers who measured the credibility of the traditional media found that usage of the media and its believability are somehow interrelated to each other (Carter & Greenberg, 1965; Rimmer & Weaver, 1987); people who spend more time reading newspapers are more satisfied with them (Burgoon, M., Burgoon, J. K., & Wilkinson, 1981). Thus, my second Hypothesis comes from the assumption that the media's credibility has a relationship to an individual's use of the media:

> H2: Online newspaper credibility will be correlated with and individual's use of online newspapers.

Previous research found that there are no significant differences between the contents of the traditional newspapers and the online newspapers (PRC, 1998; Singer, 2001). Online newspapers publish the same articles without any changes from the printed form. Thus, people may assume that the online newspapers are the same as the traditional newspapers. Previous researchers have a consistent finding that newspapers are rated the most credible when compared to other media (Flanagin et al., 2000; Schweiger, 2000). If people more trust newspapers more and see no difference between print and online forms of news, people may evaluate the credibility of online newspapers as highly as traditional newspapers. Therefore, familiarity with the media organizations is taken into consideration. My third hypothesis is:

> H3: Online newspaper credibility will be correlated with an individual's familiarity with the printed form of the online newspaper.

Factors of Online Newspaper Credibility

Factors of the media credibility have been studied by many researchers in the past half a century. Earlier researchers agreed that credibility is a multi-dimensional concept (Meyer, 1974). Hovland and Weiss (1951) discovered two dimensions of source credibility: 'trustworthiness' and 'expertness.' Berlo, Lemert, and Mertz (1969) examined 83 scales to find out what factors should be used to measure credibility. They reduced those items to 35 scales and categorized them into three dimensions: 'safety,' 'qualification,' and 'dynamism.' Safety is the same dimension as trustworthiness, and qualification is the same as expertness. Jacobson (1969) put trustworthiness and expertness together and labeled them as 'authenticity,' and used other dimensions, which are 'objectivity.' 'dynamism,' and 'respite.' Shaw (1973) found that 'impartiality,' 'trustworthiness,' and 'completeness' are influential factors of media credibility. Singletary (1976) tested six factors: 'knowledgeability,' 'attraction,' 'trustworthiness,' 'articulation,' 'hostility,' and 'stability,' and found 'knowledgeability' the most accounted for among them. The findings of these earlier studies are consistent. Accordingly, 'expertness,' 'trustworthiness,' 'objectivity,' and 'dynamism' are reasonable factors to be labeled and adopted in this research project.

Meyer (1988) analyzed credibility factors based on Gaziano and McGrath's (1986) study, and came up with five items: 'fair,' 'unbiased,' 'tells the whole story,' 'accurate,' and 'can be trusted.' Meyer's five dimensions seemed to be the most appropriate to measure credibility and have been adopted by most recent researchers (Slattery & Tiedge, 1992; Johnson et al., 1998, 2000; Mayo & Leshner, 2000; Flanagin et al., 2000).

In this research, a total of fourteen factors were selected to measure online newspaper credibility. 'Expertness' and 'dynamism' and Meyer's five items: 'fairness,' 'bias,' 'completeness,' 'accuracy,' and 'trustworthiness' are pulled out from the previous studies on the traditional media. 'Dynamism' consists of 'timeliness' and 'depth' in this case. These two items will be one of the main factors for online newspapers' credibility since they are major features of the Internet. The online newspapers allow readers to get newer and further information than the traditional newspapers. How fast and deeply the media delivers news must be key points. Two more items are drawn from past findings. Those are 'newsworthiness,' and 'reputation.' 'Newsworthiness' is taken into consideration because people tend to go online to fulfill their personal interests (Mings, 1997). 'Reputation' is separated from expertness because people may positively judge online newspapers only because printed versions of the same newspapers are highly reputable.

Other three factors are employed due to the nature of the online media. Sunder (1998) found that poorly sourced news stories online negatively affect reader's perceptions. Therefore, 'source reliability' will be one component of credibility. 'Interactivity' is one of the main features of the online media. It allows senders and receivers to have mutual communication, and will possibly change the culture of journalism (Deuze, 1999). 'Editorial process' is also included. Most online articles are the exact same stories as those in print (Singer, 2001), but some online newspapers give readers a chance to add information to the web (Gilster, 1997; Massey & Levy, 1999). If people think the editorial process online is the same as that of print, online newspapers' credibility will be as high as traditional newspapers. In this study, online newspaper credibility is measured by the following factors: 'reputation,' 'expertness,' 'timeliness,' 'completeness,' 'fairness,' 'accuracy,' 'source reliability,' 'editorial process,' 'depth,' 'objectivity,' 'trustworthiness,' 'interactivity,' 'newsworthiness,' and 'no level of bias.'

Method

Measures

Online newspaper credibility is a dependent variable. Credibility was measured by fourteen factors that were presented above. Respondents were asked if they agreed that the fourteen items represent online newspapers' characteristics. They were required to rate each factor by "strongly agree," "agree," "neither," "disagree," and "strongly disagree." (See appendix A) Respondents' perceptions of online newspapers appeared through examination of each factor.

The independent variables are the following: 1) an individual's experience with the Internet, 2) an individual's usage of online newspapers, 3) frequency of the online newspaper use and 4) an individual's familiarity with the printed form of the online newspaper. Respondents were asked if they use the Internet and if they read any online newspapers. They were also asked for frequency of the Internet use and online newspapers use, and for familiarity with the printed newspapers.

Sampling

Researchers found that the dominant users of the Internet were the well educated (PRC, 1998). The U.S. Department of Commerce released the statistics of Internet usage in 2000. According to the statistics, 74.5 % of the users had a bachelor's degree or more. 56.8% of those between the ages of 18 and 24 use the Internet. This is relatively higher than other age groups and the national average (2000, p.41). There is also a finding that younger people tend to view the Internet as more credible (Johnson et al., 2000).

This study was limited to undergraduate students of Ohio University. Undergraduate students are classified as an age group of 18 to 24 within higher education. This age group is an appropriate sampling population (56.8% of those between the ages of 18 and 24 use the Internet) and the main purpose of this research is to seek reasons why people think of online newspapers as being credible. If most respondents are inexperienced with the Internet, it might be difficult to obtain what influences people's attitudes about online newspapers' credibility.

Procedure

A survey was employed to collect the data. One undergraduate telecommunication class, which had wide cross-section of students, was selected. Questionnaires were distributed in the beginning of the class. The questionnaires posed close-ended questions. The respondents were only informed that the survey was about online newspapers, but nothing else. It took about five minutes for them to fill out the questionnaires. Twenty responses were collected from the undergraduate class.

Analysis

The Pearson product-moment correlation coefficient was used for testing H1, H2, and H3. Each independent variable (an individual's experience of the Internet, an individual's usage of online newspapers, and the familiarity with the printed form) and each dependent variable (factors of the credibility: reputation, expertness, timeliness, completeness, fairness, accuracy, source reliability, editorial process, depth, objectivity, trustworthiness, interactivity, newsworthiness, and no level of bias) were computed to see if any relationships existed between the two of them.

In addition to that, each mean of the dependent variables was calculated to see which factors respondents rated higher than others. What percentage of respondents strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree on each factor were also calculated to see the dispersion more clearly. This additional analysis gave us some ideas how respondents perceive online newspaper credibility and for what reasons.

Results

Pertaining to H1, each correlation of the credibility factors and frequency of the Internet usage were calculated. Each factor was rated 1= "strongly agree" to 5= "strongly disagree." The number of hours spend on the Internet indicates the frequency of Internet usage. Table 1 shows that there are strong negative correlations between the frequency of Internet usage and timeliness ($r=-0.529$, $p<0.05$), completeness ($r=-0.529$, $p<0.05$), and newsworthiness ($r=-0.597$, $p<0.01$). These negative correlations indicate positive relationships in this case since each factor was numbered 1= "strongly agree" to 5= "strongly disagree." For example, 1 indicated the highest timeliness and 5 indicated the lowest timeliness of online newspapers. When an individual's hours spent on the Internet increased, the credibility factors showed a lower score. In other words, the more time respondents spent online, the more positive attitudes they had toward online newspapers' credibility, especially in timeliness, completeness, and newsworthiness.

Table 1

Correlations

Factors		Frequency of the Internet Use	Use of Online Newspapers	Frequency of Online Newspaper Use	Familiarity with the Printed Newspapers
Reputation	Correletion	-.116	.229	-.012	-.311
	Sig.	.627	.331	.961	.183
Expertness		-.092	.215	-.055	-.271
		.698	.363	.817	.248
Timeliness		-.529*	.594**	.571**	-.333
		.017	.006	.009	.152
Completeness		-.507*	.343	.564**	-.094
		.022	.139	.010	.692
Fairness		-.283	.000	-.147	-.169
		.227	1.000	.537	.477
Accuracy		-.261	.524*	.092	-.570**
		.266	.018	.701	.009
Source Reliability		-.181	.203	.066	-.340
		.445	.391	.782	.143
Editorial Process		-.237	-.207	-.046	.147
		.315	.382	.847	.537
Depth		-.264	.312	.425	-.333
		.261	.180	.062	.151
Objectivity		-.048	.312	.297	-.312
		.842	.180	.204	.181
Trustworthiness		-.097	.374	.234	-.551*
		.683	.105	.320	.012
Interactivity		-.203	.062	.514*	-.201
		.391	.795	.020	.395
Newsworthiness		-.597**	.000	.287	-.128
		.005	1.000	.220	.590
Unbiased		-.022	.075	-.111	.221
		.928	.754	.640	.349

*. (P<0.05)

**. (P<0.01)

(N=20)

Note:

1=Strongly Agree 2=Agree 3=Neither 4=Disagree 5=Strongly Disagree	Hours Spent	1=yes 2=no	1=more than once a day 2=once a day 3=every other day 4=once a week 5=less than once a week	1=only by names 2=sometimes 3=often

Pertaining to H2, each credibility factor was separately calculated according to the use of online newspapers and frequency of use of online newspapers. The use of online newspapers (if respondents read online newspapers) were numbered by 1= "yes" and 2= "no." Some significant positive relationships were found from table 1. Timeliness (r=0.594, p<0.01) and Accuracy (r=0.524, P<0.05) were highly correlated with use of online newspaper. Respondents positively rated timeliness and accuracy as credibility factors when they read online newspapers, and vice versa. The frequency of use of online newspapers (how often respondents read online newspapers) were rated by 1= "more than once a day," 2= "once a day," 3= "every other day," 4= "once a week," and 5= "less than once a week." Other strong positive relationships were also found between frequency use of online newspapers and credibility factors. Timeliness (r=0.571, p<0.01), completeness (r=0.564, p<0.05), and interactivity (r=0.514, p<0.05) were highly correlated with the frequency of use of online newspapers. The more often respondents read online newspapers, the more positively they rated those three factors, and vice versa. H2 was also supported because there were significant relationships between online newspapers' usage and credibility factors, and between frequency of online newspapers' usage and credibility factors. By testing H2, timeliness, completeness, accuracy, and interactivity were highly noted.

Pertaining to H3, each credibility factor and familiarity of the printed form of online newspapers was calculated. Familiarity (if respondents read or know the printed form of online newspapers) was rated by 1= "only by names," 2= "sometimes," and 3= "often." Two strong negative relationships were found in accuracy (r=-0.570, p<0.01) and trustworthiness (r=-0.551, p<0.05) in table 1. The more respondents were familiar with the printed form, the higher credibility based on accuracy and newsworthiness they had, and vice versa.

An additional analysis was conducted to see which credibility factors respondents rated higher. Each mean of the credibility factors (how respondents agreed with them) were calculated (table 2). Timeliness (M=2.05, SD=0.6408) was ranked on the top, and depth (M=2.3, SD=0.6569) was ranked second. Reputation (M=2.35, SD=0.6708) and accuracy (M=2.35, SD=0.4894) were both third. The rest were respectively ranked as the following: completeness (M=2.4, SD=0.5982), source reliability (M=2.45, SD=0.7592), newsworthiness (M=2.5, SD=0.8272), interactivity (M=2.55, SD=0.8256), trustworthiness (M=2.55, SD=0.6863), fairness (M=2.6, SD=0.5026), objectivity (M=2.7, SD=0.6569), expertness (M=2.75, SD=0.7164), editorial process (M=2.85, SD=0.7452), and no level of bias (M=3.05, SD=0.6863).

Table 2

Reasons for Credibility of Online Newspapers

Ranking	Factors	Mean	SD
1	Timeliness	2.05	.6048
2	Depth	2.3	.6569
3	Reputation	2.35	.6708
3	Accuracy	2.35	.4894
5	Completeness	2.4	.5982
6	Source Reliability	2.45	.7592
7	Newsworthiness	2.5	.8272
8	Interactivity	2.55	.8256
8	Trustworthiness	2.55	.6863
10	Fairness	2.6	.5026
11	Objectivity	2.7	.6569
12	Expertness	2.75	.7164
13	Editorial Process	2.85	.7452
14	Unbiased	3.05	.6863

Note: 1=Strongly Agree 2=Agree 3=Neither 4=Disagree 5=Strongly Disagree

To obtain a clearer picture of the dispersion of responses, the percentages of which respondents agreed with the credibility factors were calculated (table 3). 15% of respondents strongly agreed that online newspapers are timely in their reports, and 65% agreed. 10% strongly agreed that online newspapers deliver in-depth information, and 50 % agreed. As other notable points, more than 60% either strongly agreed or agreed that online newspapers are reputable. 65% agreed with accuracy, 55% agreed with trustworthiness, more than 50% either strongly agreed or agreed with interactivity, and more than 50% either strongly agreed or agreed with newsworthiness.

It is also notable that 60% neither agreed nor disagreed with fairness, 50% with objectivity, and 70% with no level of bias. Even 10 % disagreed with objectivity, and more than 15% either disagreed or strongly disagreed with that online newspapers are unbiased.

Editorial Process was ranked lower in table 2, and did not distinguish differences among each extent of the agreement. Source reliability also had a wide range, but still more than 55% either agreed or strongly agreed with the factor. The most interesting finding is that newsworthiness got the whole range of agreements. More than 50% either strongly agreed or agreed, though 5% strongly disagreed and 40% said neither.

Table 3

Percentage of Agreement on each Credibility Factor

(%)

Factors	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Reputation	5	60	30	5	0
Expertness	0	40	45	15	0
Timeliness	15	65	20	0	0
Completeness	5	50	45	0	0
Fairness	0	40	60	0	0
Accuracy	0	65	35	0	0
Source Reliability	5	55	30	10	0
Editorial Process	0	35	45	20	0
Depth	10	50	10	0	0
Objectivity	0	40	50	10	0
Trustworthiness	0	55	35	10	0
Interactivity	5	50	30	15	0
Newsworthiness	5	50	40	0	5
Unbiased	0	15	70	10	5

(N=20)

Discussion

Usage and credibility

H1, H2, and H3 were upheld from the findings. There is a correlation between an individual's experience using the Internet and the online newspapers' credibility in terms of timeliness, completeness, and newsworthiness. There is a correlation between an individual's usage of online newspapers and online newspapers' credibility in terms of timeliness, completeness, interactivity, and accuracy. There is a correlation between an individual's familiarity with the printed form and online newspapers' credibility in terms of accuracy and trustworthiness.

The perception of online newspapers' credibility is positively related to an individual's experiences of the medium. More experienced users of the Internet tend to think of online newspapers as being more credible. Users of online newspapers perceive it as being credible. The more often they read them, the higher they evaluate credibility. Credibility of online newspapers becomes higher when readers are more familiar with the printed form of the same newspapers. The main finding here is that credibility of the medium is correlated to familiarity with it. As it is mentioned already, previous studies have consistent findings that people's usage of traditional media has correlations with their perception of credibility (Carter et al., 1965; Rimmer et al., 1987; Burgoon et al., 1981). This research found that online newspapers' credibility is accordant to the past findings. Online newspapers are more credible when people are more familiar with them.

It is interesting that H3 was supported especially in terms of accuracy and trustworthiness. That implies that readers are unaware of differences between online and printed newspapers. Actually, they do not differ in their content, except that online newspapers give more emphasis to local news (Singer, 2001). As a supplement for this research, qualitative in-depth interviews were also conducted to make sense of Ohio University's students' usage of the online newspapers. This study shows that interviewees perceived the content of online newspapers as being exactly the same as printed newspapers. It also revealed that printed newspapers have quite a high credibility. Therefore, online newspapers, which carry the same stories as printed newspapers, are automatically perceived as being credible. If people completely relied on traditional newspapers, they also relied on online newspapers without any doubts as to their level of believability.

This study also found that people evaluate online newspapers differently from the Internet. Interviewees had concerns when they talked about the Internet as a whole. They mentioned the importance of cross-referencing information on the web if it was not from a reputable source. In other words, people trust online information as long as a web site has a reputation. Online newspapers are perceived as being highly reputable. People trust online newspapers as much as they trust print newspapers. But they still acknowledge the instability of the Internet. The findings suggest that online newspapers are independent from the Internet as a medium, but are dependent on traditional newspapers. Online newspapers are considered nothing more than printed newspapers that go online.

Reasons for online newspapers' credibility

Online newspapers are highly evaluated by timeliness and depth. These two factors were expected to be placed higher because they are main features of the Internet. Most respondents think online newspapers deliver information in a timely and in-depth manner.

Reputation and accuracy were rated high. It is probably because respondents do not see differences between online newspapers and the printed newspapers. Accuracy is especially correlated with familiarity of the printed form of the online newspapers, people automatically think of the online newspapers as accurate if they think the traditional newspapers are accurate. It is probably the same for trustworthiness, which also has a strong relationship with familiarity of the printed form. Therefore, there might be significant differences between online newspapers that have the printed form and the online newspapers that operate only on the Internet. The latter tend to be new organizations and have not established their reputation.

More than half of the respondents answered that online newspapers have completeness and source reliability in their coverage. According to this, people relatively trust what online newspapers say.

Frequency of Internet use and online newspaper use are correlated with newsworthiness and interactivity. They were not ranked high, but still more than half of the respondents agreed with these factors. Previous studies found that people use the Internet mainly for information gathering. If people seek particular information, of course, the information must be newsworthy for them. Interactivity has a strong relationship with frequency of online newspaper use, probably because those who do not read online newspapers are unaware of online interactivity, and vice versa.

An important finding here is that more than half of the respondents neither disagree nor agree that online newspapers are fair, objective, and unbiased. It is obvious that those factors are not reasons for why people think of online newspapers as being credible. The past research found that the traditional newspapers are mostly credible in all factors but impartiality (Schweiger, 2000). People probably judge online newspapers with the same criteria that they do for traditional newspapers.

Editorial process is also rejected as a reason for credibility. However, it is interesting to see the dispersion of this factor. People fail to have a consistent idea of whether or not online newspapers have the same editorial process as the traditional newspapers. This confusion may be because people do not really know what online newspapers are. 45% answered neither for this question. People do not know what is going on in the newsroom online.

Accordingly, reasons for online newspapers' credibility are evaluated by the following nine factors: timeliness, depth, reputation, accuracy, completeness, source reliability, newsworthiness, interactivity, and trustworthiness.

Conclusion

A significant finding in this research is that college students at Ohio University think of online newspapers' credibility as being relatively high. Although the sampled population was small and limited, reasons for the credibility still became clear. The reasons for online newspapers' credibility are not so different from those for the traditional counterparts, except for some online characteristics. Ohio University's students perceive online newspapers as a credible medium.

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Appendix A

Questionnaire

Hello! This is Yoshiko. I'm a graduate student of OU majoring in Communication & Development Studies. I'm interested in online newspapers. I would very much appreciate your help in answering the following questions. This should take only 3-5 minutes of your time. You will not be identified, and all responses will remain confidential.

Please circle ONE answer for each of the following questions.

Do you often go to the Internet?

Yes No

How many hours do you spend using the Internet on a typical day?
Please write your answer.

____

Do you read any online newspapers?

Yes No

How often do you read online newspapers?

More than once a day	Once a day	Every other day	Once a week	Less than once a week

How familiar are you with traditional printed newspapers of the online newspapers that you know or read? (If you know or read New York Time's online newspaper, for example, are you familiar with the printed form?)

I know only by the names.	I read them sometimes.	I read them often.

Please rate your perception of online newspapers that you know or read according to the following statements.

Online newspapers are reputable.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are written by experts.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are timely in their reporting of events.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers tell the most important elements of stories.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are fair.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers accurately report events.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers use reliable sources.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers use the same editorial processes as the printed form.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers give me more in-depth information because they allow me to examine the event history through links to previous articles.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are objective in their separation of facts from opinions.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers can be trusted in their reporting of events.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers have more accountability to their audiences because readers can directly respond to their contents by emailing the writers.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers cover the stories that I feel are important for the general public.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are unbiased.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Yoshiko Nozato
6516 Linchmere Lane
Dublin, OH 43017
(614)764-7436
yn256401@ohio.edu

Credibility of Online Newspapers

Yoshiko Nozato

Communication & Development Studies

Center for International Studies

Ohio University

Communication Technology & Policy Division

AEJMC 2002 Miami Beach Convention

Abstract

This research examined the credibility of online newspapers. There were strong relationships between credibility and respondents' experiences with the Internet, online newspapers, and familiarity with printed newspapers. Timeliness, depth, reputation, and accuracy of online newspapers appeared to be important to respondents. The findings suggest that respondents perceived the content of online newspapers to be the same as printed newspapers. Online newspapers' credibility was evaluated as being high.

Credibility of Online Newspapers

Introduction

Internet technology has made communication much easier and less expensive. It has attracted many people and has penetrated into people's daily lives. The mass media also have accepted the Internet. Almost all forms of traditional media, such as radio, television, and newspapers have extended their work into this new field. The first online newspaper to present its content electronically was the *Chicago Tribune* in 1992 (Deuze, 1999). Since 1992, online media have dramatically evolved. The Internet and the World Wide Web have both significantly influenced modern journalism. Many television, radio broadcasting stations, and newspapers operate their sites using Internet technology.

Online media distinguish themselves from traditional media. Online media allows readers to enjoy browsing their content and offer not only texts but also digital images. Online media can present the most recent information and links to related news articles from local to international topics. The interactive features of the Internet seemingly imply that online media have more advantages than traditional media forms. People's expectations for new types of journalism are driving them online. Some have begun seeing the Internet as an alternative to traditional media.

It is still uncertain if online media meet people's expectations, however many people do rely on it for news. Research has found that online audiences go to news web sites "to get information that is unavailable elsewhere, for convenience, and the ability to search for news on a particular topic" (Pew Research Center [PRC], 1998). People must place some reliance on online journalism if they are using it. Online audiences are surely increasing despite of the fact that there is a serious concern about misinformation on the Internet. An evaluation of Internet sites that presented health information showed a drop in reliability between 1996 and 1997 (Spang & Baker, 2000). If reliability is an issue, what are the reasons for increased dependency on online media? How do readers evaluate the content of online media? This research was conducted to examine the credibility of online media by focusing on online newspapers. It will provide a better understanding of why people read online media and how people perceive the information. Finally, it will help develop and improve future journalism on the World Wide Web.

Literature Review

Usage of the Internet

The Internet allows people to do a variety of things. People use email or chat to keep in touch with people who are far away and with people whom they meet everyday. Some people use games on the Web to have fun or to kill time. Others look for information through search engines. People also go to online media to get weather reports, entertainment news, local or international news, business information, and political news.

There are two dimensions of usage of the Internet. The Internet can be used as mediated interpersonal technologies, which are for social bonding, relationship maintenance, problem solving, and persuasion. The Internet can also be used as mass communication, which is for informational and leisure purposes (Flanagin & Metzger, 2001). One study suggests that Internet users are classified along with these two categories, interpersonal utility and information seeking (Papacharissi & Rubin, 2000).

Motivations of using the Internet for the former are isolation, dislocation, long-distance social network, lack of satisfaction of current situation, and sense of belonging (Bakardjieva & Smith, 2001). Those for the latter are surveillance, economic security, and self-education (Mings, 1997; Papacharissi & Rubin, 2000; Flanagin & Metzger, 2001).

People go to the Internet increasingly as a source of information. Nearly half of all Internet users go to the Internet at least once every week to get information (Pew Research Center [PRC], 1999). Information seeking is widely accepted as a usage of the Internet in the previous studies (Mings, 1997; Stempel, Hargrove, & Bernt, 2000; Ferguson & Perse; Papacharissi & Rubin, 2000; Flanagin & Metzger, 2001). To acquire information is a principal reason why people go online.

Online media attract the audience for several reasons: interactivity, personalization of news, and convergence (Deuze, 1999). For example, interactivity means that people instantly send feedback to the writer by email. It could possibly lead to a dynamic shift in power control of mass media. The dominant paradigm in traditional communication, one sender to many receivers, can be changed on the Internet to many senders to many receivers (Li, 1998). An audience can possibly give further or detailed information by interacting with the newsroom. This is able to happen since journalists increasingly rely on online information for newsgathering (Garrison, 2001). Online media users commonly prefer the personalization of news. It allows people to customize news in terms of their interest. They can read only what they want to know when they have time. Convergence is one of the great features of the Internet, hyperlinks. Online media offers links to the related topics, history of an incident, background stories, and visual images.

The Pew Research Center (1999) found that Internet users are more interested in news than non-users. Furthermore, those who seek information for the printed newspapers also look for news online. Mings (1997) found that those who gain gratification from traditional newspapers also seek the same gratification from online newspapers. She also suggested that people are more likely to use online newspapers when they look for specific topics, such as business. The online audience perceives online newspapers as more useful for getting particular information than scanning a printed paper.

Misinformation on the Internet

The Internet's credibility is a major concern since information seeking is one of the main purpose of using the Internet. Online users have easy access to abundant sources but also run the risk of getting false information. Apparently, there is less control and gatekeeping on the web than for print publications. Neither authoritarian governments nor institutions screen can all the information on the Internet due to its nature. Nearly anyone could publish on the Internet. It needs to be considered that thousands of individuals have the opportunity to publish in even highly prestige newspapers' sites, such as the *Wall Street Journal* and the *New York Times* online (Gilster, 1997, p. 89). However, less critical and uninformed people are more likely to accept an untruth as a truth (Hernon, 1995). Falsity on the web is seldom revealed because there is too much information. The more information is put on the Internet, the chance of discovering misinformation decreases. In addition to that, most people neither have time to verify its accuracy nor go back to the same site because the browser may fail to find it again (Calvert, 2001). Individual education is the most plausible way to avoid getting inaccurate information. Studies suggest the necessity of new criteria for the online media literacy (Floridi, 1996; Levi, 2000).

Credibility of the Internet

Despite the fact that the findings show the existence of misinformation on the web, other researchers found that the online media has believability as high as the traditional media in certain circumstances. Internet users judged online political information sources as more credible than traditional media counterparts (Johnson & Kaye, 1998). More experienced users trust more the content of the online media (Flanagin et al., 2000; Johnson et al., 2000; Schweiger, 2000). There are no significant findings that people rate the Internet less credible than television and radio. Newspapers are rated the most credible (Flanagin et al., 2000; Schweiger, 2000). According to the Pew Research Center (1998), " Internet audiences find the websites of various news organizations no more or less accurate then the information found in those organizations' traditional news outlets."

These findings indicate that people regard the Internet as being credible even though they should think of it as less credible. Flanagin and Metzger (2000) gave an explanation for this gap, "respondents may judge credibility on the basis of content rather than medium." Existent studies only compared credibility of the Internet to that of the traditional counterparts. Schweiger (2000) suggests, "Future studies on credibility should not only examine the credibility of the web as a whole, but also its single subsystems." Thus, this research attempts to investigate the credibility of online news media by examining online newspapers.

The gap is a considerable issue for the betterment of the online media. Why do people perceive online media as credible (specifically online newspapers) when there is still anxiety over the accuracy of the Internet? This is the main purpose of this research project.

Study Design

This study examines how college students evaluate credibility of the online newspapers. Therefore, the research question is:

RQ: How do students perceive the credibility of online newspapers?

Many studies that examine the credibility of the Internet found that an individual's experience with the Internet is mutually related to the perception of the Internet's credibility; more experienced people assess the Internet as being more credible (Flanagin et al., 2000; Johnson et al., 2000; Schweiger, 2000). In addition to that, online users are more interested in the news than non-users (PRC, 1998). Therefore, my hypothesis is that:

H1: Online newspaper credibility will be correlated with an individual's experience with the Internet.

Former researchers who measured the credibility of the traditional media found that usage of the media and its believability are somehow interrelated to each other (Carter & Greenberg, 1965; Rimmer & Weaver, 1987); people who spend more time reading newspapers are more satisfied with them (Burgoon, M., Burgoon, J. K., & Wilkinson, 1981). Thus, my second Hypothesis comes from the assumption that the media's credibility has a relationship to an individual's use of the media:

> H2: Online newspaper credibility will be correlated with and individual's use of online newspapers.

Previous research found that there are no significant differences between the contents of the traditional newspapers and the online newspapers (PRC, 1998; Singer, 2001). Online newspapers publish the same articles without any changes from the printed form. Thus, people may assume that the online newspapers are the same as the traditional newspapers. Previous researchers have a consistent finding that newspapers are rated the most credible when compared to other media (Flanagin et al., 2000; Schweiger, 2000). If people more trust newspapers more and see no difference between print and online forms of news, people may evaluate the credibility of online newspapers as highly as traditional newspapers. Therefore, familiarity with the media organizations is taken into consideration. My third hypothesis is:

> H3: Online newspaper credibility will be correlated with an individual's familiarity with the printed form of the online newspaper.

Factors of Online Newspaper Credibility

Factors of the media credibility have been studied by many researchers in the past half a century. Earlier researchers agreed that credibility is a multi-dimensional concept (Meyer, 1974). Hovland and Weiss (1951) discovered two dimensions of source credibility: 'trustworthiness' and 'expertness.' Berlo, Lemert, and Mertz (1969) examined 83 scales to find out what factors should be used to measure credibility. They reduced those items to 35 scales and categorized them into three dimensions: 'safety,' 'qualification,' and 'dynamism.' Safety is the same dimension as trustworthiness, and qualification is the same as expertness. Jacobson (1969) put trustworthiness and expertness together and labeled them as 'authenticity,' and used other dimensions, which are 'objectivity.' 'dynamism,' and 'respite.' Shaw (1973) found that 'impartiality,' 'trustworthiness,' and 'completeness' are influential factors of media credibility. Singletary (1976) tested six factors: 'knowledgeability,' 'attraction,' 'trustworthiness,' 'articulation,' 'hostility,' and 'stability,' and found 'knowledgeability' the most accounted for among them. The findings of these earlier studies are consistent. Accordingly, 'expertness,' 'trustworthiness,' 'objectivity,' and 'dynamism' are reasonable factors to be labeled and adopted in this research project.

Meyer (1988) analyzed credibility factors based on Gaziano and McGrath's (1986) study, and came up with five items: 'fair,' 'unbiased,' 'tells the whole story,' 'accurate,' and 'can be trusted.' Meyer's five dimensions seemed to be the most appropriate to measure credibility and have been adopted by most recent researchers (Slattery & Tiedge, 1992; Johnson et al., 1998, 2000; Mayo & Leshner, 2000; Flanagin et al., 2000).

In this research, a total of fourteen factors were selected to measure online newspaper credibility. 'Expertness' and 'dynamism' and Meyer's five items: 'fairness,' 'bias,' 'completeness,' 'accuracy,' and 'trustworthiness' are pulled out from the previous studies on the traditional media. 'Dynamism' consists of 'timeliness' and 'depth' in this case. These two items will be one of the main factors for online newspapers' credibility since they are major features of the Internet. The online newspapers allow readers to get newer and further information than the traditional newspapers. How fast and deeply the media delivers news must be key points. Two more items are drawn from past findings. Those are 'newsworthiness,' and 'reputation.' 'Newsworthiness' is taken into consideration because people tend to go online to fulfill their personal interests (Mings, 1997). 'Reputation' is separated from expertness because people may positively judge online newspapers only because printed versions of the same newspapers are highly reputable.

Other three factors are employed due to the nature of the online media. Sunder (1998) found that poorly sourced news stories online negatively affect reader's perceptions. Therefore, 'source reliability' will be one component of credibility. 'Interactivity' is one of the main features of the online media. It allows senders and receivers to have mutual communication, and will possibly change the culture of journalism (Deuze, 1999). 'Editorial process' is also included. Most online articles are the exact same stories as those in print (Singer, 2001), but some online newspapers give readers a chance to add information to the web (Gilster, 1997; Massey & Levy, 1999). If people think the editorial process online is the same as that of print, online newspapers' credibility will be as high as traditional newspapers. In this study, online newspaper credibility is measured by the following factors: 'reputation,' 'expertness,' 'timeliness,' 'completeness,' 'fairness,' 'accuracy,' 'source reliability,' 'editorial process,' 'depth,' 'objectivity,' 'trustworthiness,' 'interactivity,' 'newsworthiness,' and 'no level of bias.'

Method

Measures

Online newspaper credibility is a dependent variable. Credibility was measured by fourteen factors that were presented above. Respondents were asked if they agreed that the fourteen items represent online newspapers' characteristics. They were required to rate each factor by "strongly agree," "agree," "neither," "disagree," and "strongly disagree." (See appendix A) Respondents' perceptions of online newspapers appeared through examination of each factor.

The independent variables are the following: 1) an individual's experience with the Internet, 2) an individual's usage of online newspapers, 3) frequency of the online newspaper use and 4) an individual's familiarity with the printed form of the online newspaper. Respondents were asked if they use the Internet and if they read any online newspapers. They were also asked for frequency of the Internet use and online newspapers use, and for familiarity with the printed newspapers.

Sampling

Researchers found that the dominant users of the Internet were the well educated (PRC, 1998). The U.S. Department of Commerce released the statistics of Internet usage in 2000. According to the statistics, 74.5 % of the users had a bachelor's degree or more. 56.8% of those between the ages of 18 and 24 use the Internet. This is relatively higher than other age groups and the national average (2000, p.41). There is also a finding that younger people tend to view the Internet as more credible (Johnson et al., 2000).

This study was limited to undergraduate students of Ohio University. Undergraduate students are classified as an age group of 18 to 24 within higher education. This age group is an appropriate sampling population (56.8% of those between the ages of 18 and 24 use the Internet) and the main purpose of this research is to seek reasons why people think of online newspapers as being credible. If most respondents are inexperienced with the Internet, it might be difficult to obtain what influences people's attitudes about online newspapers' credibility.

Procedure

A survey was employed to collect the data. One undergraduate telecommunication class, which had wide cross-section of students, was selected. Questionnaires were distributed in the beginning of the class. The questionnaires posed close-ended questions. The respondents were only informed that the survey was about online newspapers, but nothing else. It took about five minutes for them to fill out the questionnaires. Twenty responses were collected from the undergraduate class.

Analysis

The Pearson product-moment correlation coefficient was used for testing H1, H2, and H3. Each independent variable (an individual's experience of the Internet, an individual's usage of online newspapers, and the familiarity with the printed form) and each dependent variable (factors of the credibility: reputation, expertness, timeliness, completeness, fairness, accuracy, source reliability, editorial process, depth, objectivity, trustworthiness, interactivity, newsworthiness, and no level of bias) were computed to see if any relationships existed between the two of them.

In addition to that, each mean of the dependent variables was calculated to see which factors respondents rated higher than others. What percentage of respondents strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree on each factor were also calculated to see the dispersion more clearly. This additional analysis gave us some ideas how respondents perceive online newspaper credibility and for what reasons.

Results

Pertaining to H1, each correlation of the credibility factors and frequency of the Internet usage were calculated. Each factor was rated 1= "strongly agree" to 5= "strongly disagree." The number of hours spend on the Internet indicates the frequency of Internet usage. Table 1 shows that there are strong negative correlations between the frequency of Internet usage and timeliness ($r=-0.529$, $p<0.05$), completeness ($r=-0.529$, $p<0.05$), and newsworthiness ($r=-0.597$, $p<0.01$). These negative correlations indicate positive relationships in this case since each factor was numbered 1= "strongly agree" to 5= "strongly disagree." For example, 1 indicated the highest timeliness and 5 indicated the lowest timeliness of online newspapers. When an individual's hours spent on the Internet increased, the credibility factors showed a lower score. In other words, the more time respondents spent online, the more positive attitudes they had toward online newspapers' credibility, especially in timeliness, completeness, and newsworthiness.

Table 1

Correlations

Factors		Frequency of the Internet Use	Use of Online Newspapers	Frequency of Online Newspaper Use	Familiarity with the Printed Newspapers
Reputation	Correletion	-.116	.229	-.012	-.311
	Sig	.627	.331	.961	.183
Expertness		-.092	.215	-.055	-.271
		.698	.363	.817	.248
Timeliness		-.529*	.594**	.571**	-.333
		.017	.006	.009	.152
Completeness		-.507*	.343	.564**	-.094
		.022	.139	.010	.692
Fairness		-.283	.000	-.147	-.169
		.227	1.000	.537	.477
Accuracy		-.261	.524*	.092	-.570**
		.266	.018	.701	.009
Source Reliability		-.181	.203	.066	-.340
		.445	.391	.782	.143
Editorial Process		-.237	-.207	-.046	.147
		.315	.382	.847	.537
Depth		-.264	.312	.425	-.333
		.261	.180	.062	.151
Objectivity		-.048	.312	.297	-.312
		.842	.180	.204	.181
Trustworthiness		-.097	.374	.234	-.551*
		.683	.105	.320	.012
Interactivity		-.203	.062	.514*	-.201
		.391	.795	.020	.395
Newsworthiness		-.597**	.000	.287	-.128
		.005	1.000	.220	.590
Unbiased		-.022	.075	-.111	.221
		.928	.754	.640	.349

*. (P<0.05)
**. (P<0.01)

(N=20)

Note:

1=Strongly Agree 2=Agree 3=Neither 4=Disagree 5=Strongly Disagree	Hours Spent	1=yes 2=no	1=more than once a day 2=once a day 3=every other day 4=once a week 5=less than once a week	1=only by names 2=sometimes 3=often

Pertaining to H2, each credibility factor was separately calculated according to the use of online newspapers and frequency of use of online newspapers. The use of online newspapers (if respondents read online newspapers) were numbered by 1= "yes" and 2= "no." Some significant positive relationships were found from table 1. Timeliness ($r=0.594$, $p<0.01$) and Accuracy ($r=0.524$, $P<0.05$) were highly correlated with use of online newspaper. Respondents positively rated timeliness and accuracy as credibility factors when they read online newspapers, and vice versa. The frequency of use of online newspapers (how often respondents read online newspapers) were rated by 1= "more than once a day," 2= "once a day," 3= "every other day," 4= "once a week," and 5= "less than once a week." Other strong positive relationships were also found between frequency use of online newspapers and credibility factors. Timeliness ($r=0.571$, $p<0.01$), completeness ($r=0.564$, $p<0.05$), and interactivity ($r=0.514$, $p<0.05$) were highly correlated with the frequency of use of online newspapers. The more often respondents read online newspapers, the more positively they rated those three factors, and vice versa. H2 was also supported because there were significant relationships between online newspapers' usage and credibility factors, and between frequency of online newspapers' usage and credibility factors. By testing H2, timeliness, completeness, accuracy, and interactivity were highly noted.

Pertaining to H3, each credibility factor and familiarity of the printed form of online newspapers was calculated. Familiarity (if respondents read or know the printed form of online newspapers) was rated by 1= "only by names," 2= "sometimes," and 3= "often." Two strong negative relationships were found in accuracy ($r=-0.570$, $p<0.01$) and trustworthiness ($r=-0.551$, $p<0.05$) in table 1. The more respondents were familiar with the printed form, the higher credibility based on accuracy and newsworthiness they had, and vice versa.

An additional analysis was conducted to see which credibility factors respondents rated higher. Each mean of the credibility factors (how respondents agreed with them) were calculated (table 2). Timeliness (M=2.05, SD=0.6408) was ranked on the top, and depth (M=2.3, SD=0.6569) was ranked second. Reputation (M=2.35, SD=0.6708) and accuracy (M=2.35, SD=0.4894) were both third. The rest were respectively ranked as the following: completeness (M=2.4, SD=0.5982), source reliability (M=2.45, SD=0.7592), newsworthiness (M=2.5, SD=0.8272), interactivity (M=2.55, SD=0.8256), trustworthiness (M=2.55, SD=0.6863), fairness (M=2.6, SD=0.5026), objectivity (M=2.7, SD=0.6569), expertness (M=2.75, SD=0.7164), editorial process (M=2.85, SD=0.7452), and no level of bias (M=3.05, SD=0.6863).

Table 2

Reasons for Credibility of Online Newspapers

Ranking	Factors	Mean	SD
1	Timeliness	2.05	.6048
2	Depth	2.3	.6569
3	Reputation	2.35	.6708
3	Accuracy	2.35	.4894
5	Completeness	2.4	.5982
6	Source Reliability	2.45	.7592
7	Newsworthiness	2.5	.8272
8	Interactivity	2.55	.8256
8	Trustworthiness	2.55	.6863
10	Fairness	2.6	.5026
11	Objectivity	2.7	.6569
12	Expertness	2.75	.7164
13	Editorial Process	2.85	.7452
14	Unbiased	3.05	.6863

Note: 1=Strongly Agree 2=Agree 3=Neither 4=Disagree 5=Strongly Disagree

To obtain a clearer picture of the dispersion of responses, the percentages of which respondents agreed with the credibility factors were calculated (table 3). 15% of respondents strongly agreed that online newspapers are timely in their reports, and 65% agreed. 10% strongly agreed that online newspapers deliver in-depth information, and 50 % agreed. As other notable points, more than 60% either strongly agreed or agreed that online newspapers are reputable. 65% agreed with accuracy, 55% agreed with trustworthiness, more than 50% either strongly agreed or agreed with interactivity, and more than 50% either strongly agreed or agreed with newsworthiness.

It is also notable that 60% neither agreed nor disagreed with fairness, 50% with objectivity, and 70% with no level of bias. Even 10 % disagreed with objectivity, and more than 15% either disagreed or strongly disagreed with that online newspapers are unbiased.

Editorial Process was ranked lower in table 2, and did not distinguish differences among each extent of the agreement. Source reliability also had a wide range, but still more than 55% either agreed or strongly agreed with the factor. The most interesting finding is that newsworthiness got the whole range of agreements. More than 50% either strongly agreed or agreed, though 5% strongly disagreed and 40% said neither.

Table 3

Percentage of Agreement on each Credibility Factor

(%)

Factors	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Reputation	5	60	30	5	0
Expertness	0	40	45	15	0
Timeliness	15	65	20	0	0
Completeness	5	50	45	0	0
Fairness	0	40	60	0	0
Accuracy	0	65	35	0	0
Source Reliability	5	55	30	10	0
Editorial Process	0	35	45	20	0
Depth	10	50	10	0	0
Objectivity	0	40	50	10	0
Trustworthiness	0	55	35	10	0
Interactivity	5	50	30	15	0
Newsworthiness	5	50	40	0	5
Unbiased	0	15	70	10	5

(N=20)

Discussion

Usage and credibility

H1, H2, and H3 were upheld from the findings. There is a correlation between an individual's experience using the Internet and the online newspapers' credibility in terms of timeliness, completeness, and newsworthiness. There is a correlation between an individual's usage of online newspapers and online newspapers' credibility in terms of timeliness, completeness, interactivity, and accuracy. There is a correlation between an individual's familiarity with the printed form and online newspapers' credibility in terms of accuracy and trustworthiness.

The perception of online newspapers' credibility is positively related to an individual's experiences of the medium. More experienced users of the Internet tend to think of online newspapers as being more credible. Users of online newspapers perceive it as being credible. The more often they read them, the higher they evaluate credibility. Credibility of online newspapers becomes higher when readers are more familiar with the printed form of the same newspapers. The main finding here is that credibility of the medium is correlated to familiarity with it. As it is mentioned already, previous studies have consistent findings that people's usage of traditional media has correlations with their perception of credibility (Carter et al., 1965; Rimmer et al., 1987; Burgoon et al., 1981). This research found that online newspapers' credibility is accordant to the past findings. Online newspapers are more credible when people are more familiar with them.

It is interesting that H3 was supported especially in terms of accuracy and trustworthiness. That implies that readers are unaware of differences between online and printed newspapers. Actually, they do not differ in their content, except that online newspapers give more emphasis to local news (Singer, 2001). As a supplement for this research, qualitative in-depth interviews were also conducted to make sense of Ohio University's students' usage of the online newspapers. This study shows that interviewees perceived the content of online newspapers as being exactly the same as printed newspapers. It also revealed that printed newspapers have quite a high credibility. Therefore, online newspapers, which carry the same stories as printed newspapers, are automatically perceived as being credible. If people completely relied on traditional newspapers, they also relied on online newspapers without any doubts as to their level of believability.

This study also found that people evaluate online newspapers differently from the Internet. Interviewees had concerns when they talked about the Internet as a whole. They mentioned the importance of cross-referencing information on the web if it was not from a reputable source. In other words, people trust online information as long as a web site has a reputation. Online newspapers are perceived as being highly reputable. People trust online newspapers as much as they trust print newspapers. But they still acknowledge the instability of the Internet. The findings suggest that online newspapers are independent from the Internet as a medium, but are dependent on traditional newspapers. Online newspapers are considered nothing more than printed newspapers that go online.

Reasons for online newspapers' credibility

Online newspapers are highly evaluated by timeliness and depth. These two factors were expected to be placed higher because they are main features of the Internet. Most respondents think online newspapers deliver information in a timely and in-depth manner.

Reputation and accuracy were rated high. It is probably because respondents do not see differences between online newspapers and the printed newspapers. Accuracy is especially correlated with familiarity of the printed form of the online newspapers, people automatically think of the online newspapers as accurate if they think the traditional newspapers are accurate. It is probably the same for trustworthiness, which also has a strong relationship with familiarity of the printed form. Therefore, there might be significant differences between online newspapers that have the printed form and the online newspapers that operate only on the Internet. The latter tend to be new organizations and have not established their reputation.

More than half of the respondents answered that online newspapers have completeness and source reliability in their coverage. According to this, people relatively trust what online newspapers say.

Frequency of Internet use and online newspaper use are correlated with newsworthiness and interactivity. They were not ranked high, but still more than half of the respondents agreed with these factors. Previous studies found that people use the Internet mainly for information gathering. If people seek particular information, of course, the information must be newsworthy for them. Interactivity has a strong relationship with frequency of online newspaper use, probably because those who do not read online newspapers are unaware of online interactivity, and vice versa.

An important finding here is that more than half of the respondents neither disagree nor agree that online newspapers are fair, objective, and unbiased. It is obvious that those factors are not reasons for why people think of online newspapers as being credible. The past research found that the traditional newspapers are mostly credible in all factors but impartiality (Schweiger, 2000). People probably judge online newspapers with the same criteria that they do for traditional newspapers.

Editorial process is also rejected as a reason for credibility. However, it is interesting to see the dispersion of this factor. People fail to have a consistent idea of whether or not online newspapers have the same editorial process as the traditional newspapers. This confusion may be because people do not really know what online newspapers are. 45% answered neither for this question. People do not know what is going on in the newsroom online.

Accordingly, reasons for online newspapers' credibility are evaluated by the following nine factors: timeliness, depth, reputation, accuracy, completeness, source reliability, newsworthiness, interactivity, and trustworthiness.

Conclusion

A significant finding in this research is that college students at Ohio University think of online newspapers' credibility as being relatively high. Although the sampled population was small and limited, reasons for the credibility still became clear. The reasons for online newspapers' credibility are not so different from those for the traditional counterparts, except for some online characteristics. Ohio University's students perceive online newspapers as a credible medium.

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Appendix A

Questionnaire

Hello! This is Yoshiko. I'm a graduate student of OU majoring in Communication & Development Studies. I'm interested in online newspapers. I would very much appreciate your help in answering the following questions. This should take only 3-5 minutes of your time. You will not be identified, and all responses will remain confidential.

Please circle ONE answer for each of the following questions.

Do you often go to the Internet?

Yes No

How many hours do you spend using the Internet on a typical day?
Please write your answer.

____

Do you read any online newspapers?

Yes No

How often do you read online newspapers?

More than once a day
Once a day
Every other day
Once a week
Less than once a week

How familiar are you with traditional printed newspapers of the online newspapers that you know or read? (If you know or read New York Time's online newspaper, for example, are you familiar with the printed form?)

I know only by the names.
I read them sometimes.
I read them often.

Please rate your perception of online newspapers that you know or read according to the following statements.

Online newspapers are reputable.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are written by experts.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are timely in their reporting of events.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers tell the most important elements of stories.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are fair.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers accurately report events.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers use reliable sources.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers use the same editorial processes as the printed form.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers give me more in-depth information because they allow me to examine the event history through links to previous articles.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are objective in their separation of facts from opinions.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers can be trusted in their reporting of events.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers have more accountability to their audiences because readers can directly respond to their contents by emailing the writers.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers cover the stories that I feel are important for the general public.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Online newspapers are unbiased.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

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EFF-089 (1/2003)